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Published at 420 Lexington Avenue, New York, N. Y.

Volume 91 **New York, October 1, 1934** **Number 1**

Proofing with Latex[1]

Royce J. Noble, Ph.D. [2]

PROOFING fabrics is probably the most ancient practice in the art of rubber manufacture. The treatment of fabrics by the natives of South America is recorded in the accounts of sixteenth century explorers. As early as 1791 a patent was issued to Samuel Peal on a process of coating fabrics with natural latex. A similar process was the subject of another patent granted to Johnson in 1797. Not until 1864 were further patents issued in this art, at which time Chas. Hancock disclosed a process differing but little from that of Peal's approximately 70 years earlier. Owing to the difficulties of securing and importing the raw material, however, little interest seems to have been shown in its use, and it is only since 1920 that any active interest in the use of latex for proofing fabrics has been indicated. Progress has been somewhat slow because of the difficulties encountered in applying latex directly to fabrics, these difficulties being directly attributable to the inherent differences between latex and solutions of rubber in solvent. To a large extent these difficulties have been overcome so that progress in proofing with latex should be more rapid.

Success in proofing fabrics depends in the first instance on the extent of impregnation attained; this in turn is dependent on 2 factors: freedom of the fabric from natural impurities such as waxes and oils, and the surface tension or wetting power of the spreading compound. In the case of solvent compounds the waxes and oil are soluble in the rubber solvent and offer no resistance to its rapid penetration, but latex does not readily wet most fibers unless they are thoroughly cleaned by boiling in alkali. Latex compounds, therefore, do not penetrate the individual fibers so well as solvent compounds. Furthermore in latex, as opposed to rubber in solvent, the rubber is in the form of discrete particles, each bearing a negative charge. In contact with a fabric also bearing a negative charge, these rubber particles are repulsed; this phenomenon is in effect equivalent to filtration of the latex, leaving the rubber on the surface of the fabric.

However it is possible to cause the rubber particles completely to penetrate the inter-fiber spaces by control of surface tension. The surface tension of ammoniated latex is approximately 40 dynes/cm^2. This value is readily depressed by suitable wetting agents, and latex so treated has the property of readily penetrating fabrics which would otherwise resist penetration and cause surface coagulation of the latex. Suitable wetting agents are the Nekals, Dispersaid, and the Igepons. While it is generally most efficient to add the wetting agent to the latex, in some cases it is equally effective to wet the fabric with a solution of such surface tension depressor before proofing. This point is particularly true when using a depressor of the type of Igepon T. By either method a good bond of the proofing coat to the fabric is assured.

Equipment

The equipment used in the application of latex to fabrics is not unlike that to which the rubber manufacturer has been accustomed, but certain modifications of the usual rubber spreading machines are necessary, when latex compounds are used, although these adaptations are easily effected. The most important change which must be made is in the relation of the spreading knife to the roll. The knife must be either slightly ahead of the usual roll instead of directly over it, or more frequently the roll is eliminated altogether so that the knife is in a free standing position (Figure 1). With this arrangement the fabric to be coated is fed over a guide roll slightly higher than the knife edge; next it passes under the knife and usually over a scrimp bar; then it passes over a steam coil, through a heating chest, or through other drying means. The knife edge is thus placed at the bottom of a trough; the only pressure exerted against the fabric is that due to the tension under which the fabric is pulled along beneath the knife.

The angle at which the knife is held will depend upon

[1] Paper read June 8, 1934, before the Boston Group, Rubber Division, American Chemical Society.

[2] Heveatex Corp., Melrose, Mass.

the type of fabric being coated as well as upon the type of compound used. With a light fabric on which it is desired to have the minimum of striking through of the latex compound, the knife should be held at an obtuse angle, using a small bank of compound and with but little tension on the cloth. In those cases where it is desired to force the latex compound into the fabric, the knife edge should be maintained at a sharper angle, and greater tension be applied to the fabric. All rolls and other parts of the equipment which come in contact with the latex or the face of the fabric to be coated must contain no copper or brass. The spreader should be grounded to prevent formation of small lumps due to coagulation by the static charges on the knife.

Other types of equipment have been found suitable for proofing with latex. A very convenient arrangement for some kinds of proofing is a spreader head, with the usual guide rolls, placed in front of a drum drier (Figure 2). With suitable take off and guide rolls the fabric is returned to a wind-up roll under the spreader for recoating. Instead of a spreader, spraying apparatus may be used to apply thin latex compounds. Spraying is not widely practiced, however, due to the mechanical difficulties usually encountered. Thick compounds may be successfully applied by calendering.

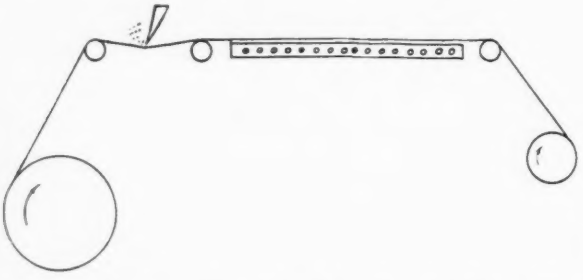


Fig. 1. Ordinary Spreader with Knife in Free Standing Position

Fabric Conditioning

Fabrics to be proofed should have had a thorough keir boiling to remove as much of the natural waxes and oils as possible. If dyed, these fabrics should have no free acid present in the cloth, nor should dyes be used which require after-treatment with copper salts. Copper may also enter the fabric during the usual finishing operations, but low maximum limits for copper content have been long established by proofers. Preferably the fabrics will not be sized inasmuch as any sizing tends to minimize the adhesion of rubber to fiber. Other than these precautions, the specifications for fabrics to be proofed with solvent compounds are likewise applicable for the latex process.

With very light fabrics care must be taken to prevent striking through. It has been pointed out that this condition may be obviated to a large extent by control of the tension of the fabric and the angle of contact of the spreader knife. In some cases it may be necessary to apply a base coat of rubber in solvent. Other means of avoiding this difficulty are the use of very thick stabilized latex compounds or heat-sensitive compounds rapidly coagulated by heat directly after being applied.

Compounding

The type of latex compound used will depend upon the character of coating desired, and its viscosity will depend upon the degree of penetration desired. In all cases the compound used must be sufficiently stable to withstand the rolling and rubbing action in front of the knife and must be sufficiently free running to maintain a constant flow of material from the center of the fabric toward each selvage. This flow tends to remove any small coagulated particles which would cause streaks. A minimum of protective agents should be used owing to the tendency to cause foaming in front of the knife and to the property of such protectives to decrease the water resistance of the rubber coating. The latex compound may contain suitable softeners to give a sufficiently plastic coating so that the rubber will not be under excessive tension when dried. Latex spreading compounds are usually made up from latex concentrates of high solids content. A typical spreading compound follows.

Rubber (as latex or latex concentrate)	100
Wetting agent	1
Whiting	150-300
Sulphur, colloidal	2
Zinc oxide, colloidal	3
Accelerator	0.2-0.5
Thickening agent	1.-2.

Proofing

In proofing cotton fabrics the best results are obtained if the fabric first is impregnated with a suitable latex composition. In this way a good base coat may be obtained, thoroughly bonded to the fabric itself so that additional top coats have little tendency to separate from the fabric. This preliminary treatment done according to Figure 3 is most successful if the impregnation bath contains a small proportion of wetting agent enabling complete penetration of the latex particles through the fabric. The impregnation may be complete, or the fabric may be wet only on one side with a thin latex compound. The fabric thus treated is dried and is then ready for the usual coating operation. In many cases only one coating operation is necessary, owing to the relatively large amount of rubber that can be introduced by means of latex as compared with rubber in solvent. Whether one or more coatings is put on, each coating is dried before further application of the latex compounds.

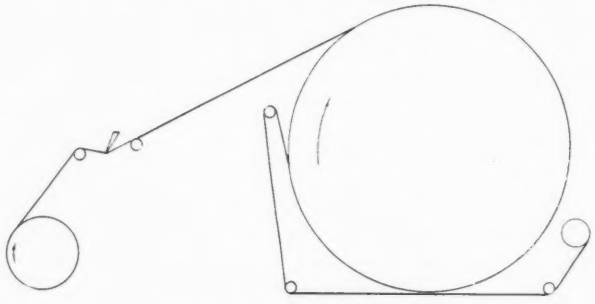


Fig. 2. Drum Drier Spreader

Drying may be effected in any convenient manner. The simplest method is by the steam table usually employed for proofing, Figure 1, but inasmuch as drying is slower with latex than with solvent, longer steam tables should be used, preferably enclosed, and with a counter-current of hot air. Drum driers may be used if the compound is of the quick setting type or if the fabric is run at a relatively low speed. Enclosed tenter frames may be used for drying in such cases as it is desired to stretch the fabric to its original width. The pin tenter frame is preferred although a tenter with suitable clamps may be employed if means for continuously cleaning the clamps are provided. All these methods have been successfully used for drying different types of proofed fabrics.

Vulcanization

Vulcanization of latex-coated fabrics may be accomplished most advantageously during the drying operation although curing is not always desirable or necessary. Since no milling of the latex compound has taken place, it is possible to introduce accelerators which produce an ultra-rapid cure. The cure is either completed during drying or initiated at drying temperatures and completed on standing. Cold curing is not generally used. It offers no economic advantage, and sulphur chloride presents certain disadvantages both as to effect on aging qualities of the rubber, particularly as to heat and light, and in weakening the fabric due to formation of hydrochloric acid.

After drying and vulcanization the proofed fabric is dusted in the usual manner with farina, potato starch, lycopodium powder, or similar materials. Methods of after-treatments of latex-proofed surfaces have been employed in some instances to improve the appearance or other characteristics of the product. Washing in warm water or washing with warm, soapy water followed by immersion in a solution of metallic salt are typical of such after-treatments.

Special Applications

For special purposes a variety of materials has been mixed with the latex compound for spreading. In manufacturing balloon fabrics, for example, mixtures of latex and viscose are commonly used. Dispersed resins and other tack-producing materials may be added to produce adhesive coatings.

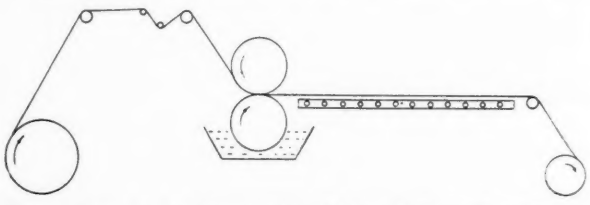


Fig. 3. Spreader for Impregnating Fabric with Latex Base Coating

A proofing process quite different from any method heretofore employed has been developed as an outgrowth of the Anode process. Briefly, an acidic and an alkaline latex are disposed on opposite sides of a fabric; under the influence of an externally applied potential the particles tend to move through the fabric in opposed directions, resulting in mutual coagulation and deposition of a thoroughly bonded coating on each side. It is also possible to coat fabrics on one side only by the Anode process.

Doubling is an operation being done to an increasing extent with latex compounds. Complete waterproofing requires that approximately 3 ounces of rubber per yard be applied to each of the fabrics, which are then joined under pressure. For many articles, especially some classes of shoe goods, only a very light bond is required, in which case it is possible to apply a coating of only 2 to 3 ounces to one fabric; and while the coating is still wet, it is joined with a second fabric under pressure; then the combined material is dried (Figure 4).

Spread sheet may also be made successfully with latex compounds. In this case the fabric serves only as a base for depositing the rubber, which is stripped off after drying. To facilitate the stripping the fabric may be previously impregnated with a coagulant or it may have a previously vulcanized coating. Use of viscous heat-sensitive compounds is particularly advantageous for preparing spread sheet, in that a thick layer is obtained in one spreading, and this layer may be rapidly set or coagulated to produce a very smooth, uniform sheet.

Artificial suedes, velvets, and the like may be made by application of cotton or rayon flock to wet latex coatings. The use of latex for this purpose has not been thoroughly developed, however, and the products so made are not yet entirely satisfactory.

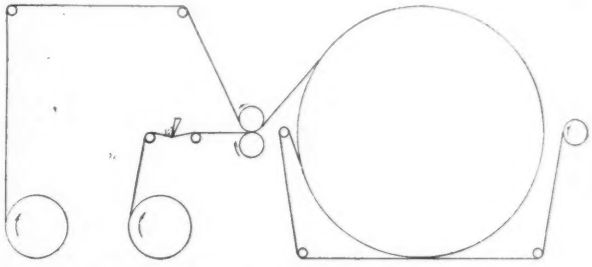


Fig. 4. Drum Drier Spreader and Doubler

Summary

It may be said that although latex rubber is relatively expensive, the cost balance of the proofing operation is in favor of latex, owing to elimination of solvent, surface curing and milling, and the possibility of applying a heavier coating in fewer applications. In addition a product of superior strength and aging quality is obtained, together with improved factory conditions in the absence of toxic and inflammable materials.

Rubber from Goldenrod[1]

SOME time before the death of Edison, newspapers contained many comments on his plans to obtain rubber from goldenrod. It is not surprising that rubber occurs in this plant because it is found in others in the same family, notably in guayule, an important commercial source. The Bureau of Plant Industry of the Department of Agriculture has taken over the work of the company organized by Edison and will at first attempt to produce a race of the goldenrod that contains a higher percentage of rubber than the average wild plants.

To find the most promising material upon which to work, determinations of the rubber content of several thousands of individual plants must be made. The National Bureau of Standards has been asked to cooperate to the extent of checking 2 methods now used to determine the rubber content. One method takes a comparatively long time, and only a few analyses can be made in a day, but it is believed accurate because the rubber is weighed directly. The other method is rapid, and by it a chemist can make as many as 30 analyses in a day. The rubber is not weighed, however, but is converted into a bromine compound. The amount of rubber is calculated by an empirical factor, from the quantity of bromine that enters into combination. The chief task of this Bureau will be to check the values of this factor.

[1] *Technical News Bulletin*, United States Bureau of Standards, Washington, D. C.

Para-Graphs

RUBBER STOPPER. The cause of the explosion of a rubber stoppered new package of resublimed aluminum chloride on removal of the stopper was questionably attributed to the stopper when the most likely cause was due to absorption of water by the chemical before packing.

BATHING SANDAL. An assembly of rubber soling with rubberized fabric straps placed between the inner and the outer sole is molded and vulcanized into a sandal for water sport and bathing use. Stitching of the parts is eliminated by the use of rubber cement, permitting economy and facility in manufacture of the article.

RUBBER AND HAIR UPHOLSTERY. Sponge or cellular rubber prepared from vulcanized frothy latex composition is used as a base upon which are built up layers of rubber treated horsehair. The hair is built up to the desired shape, treated with an aqueous dispersion of rubber by spraying, and the whole mass then vulcanized as a complete cushion.

FACTICE AND ULTRA-ACCELERATORS. To overcome the incompatibility of white factice with ultra-accelerators, 2 new products have recently been developed. Fac-Cel B for molded goods and Fac-Cel C for open steam and dry heat cures are white factices treated to eliminate the by-products formed during cure which affect ultra-accelera-tors.

RUBBER RECLAIMING. Soft non-sticky reclaimed rubber is obtained from ground vulcanized scrap by a process in which the rubber is mixed with a distillate from a turpene wood fraction obtained by the direct distillation of wood in the presence of a clay having a catalytic action. The mixture is heated until the rubber goes into solution. The solvent is expelled by further heating, and the rubber residue is treated with dilute sulphuric acid; following which action the rubber is obtained as a soft non-sticky mass.

MAKING ARTIFICIAL LEATHER. One of the most inexpensive raw materials available for making the fibrous foundation is preliberated cellulose pulp, and more specifically wood pulp which can be converted into a waterlaid web on machinery of the paper-making type. When such a web is impregnated with rubber solutions of water-dispersed rubber, e.g., rubber latex, and then dried, it takes on leather-like properties to such an extent that it can serve for such purposes as shoe innersoles.

MAKING SHOE PATTERNS. A high quality, stout tag paper is used for the purpose. A model size (8 men's, 4 women's, etc.) pattern is drafted from the last and cut out with a knife. The pattern, then reproduced in tin, is placed on one end of a grading machine. A sheet of blank tag paper is placed on the other side. The machine is then operated by tracing around the edge of the master (model size) tin pattern, and paper patterns in any size desired, that is, men's 5 to 13 and women's 1 to 9, including half sizes, are directly and automatically cut out of the tag paper.

SEALING ENVELOPES. Rubber as a sealing means in place of the usual adhesive gum on envelopes is being used in England. Four bars of a rubber compound are positioned on the envelope, which adhere firmly when brought together without pressure or moisture. The closure is not only secure, but sanitary as well.

RUBBER PROCESSING IMPROVEMENT. Less than a score of years ago 2,500 pounds per square inch was maximum tensile of vulcanized rubber; whereas today the maximum has advanced to 4,500 pounds. This result is due to a number of important factors introduced in compounding and processing such as reenforcement by carbon black, reduction of the sulphur ratio, improved accelerators, low temperature vulcanization, and more favorable mechanical processing of stocks.

RUBBER CEMENT. Fine casting results of lettering on a matte background are rendered imperfect because of slight washing of sand and other causes incident to regular foundry technique. The difficulty is entirely eliminated by spraying the mold surfaces with rubber cement, which firmly binds the surface sand particles and thus assures accurate details of the cast surfaces.

HOT TESTING RUBBER. A practical way to test rubber is to lay a test piece on the hot platen of a vulcanizing press for 20 minutes and then tear the sample by hand.

SPONGE RUBBER PROCESS. A small block of compounded rubber is placed in a mold, and space is left for subsequent expansion of the rubber. The mold is closed, and carbonic acid gas admitted to its interior at about 200 pounds' per square inch pressure, while the rubber is at normal temperature. The rubber is allowed to remain thus to afford opportunity for the carbonic acid gas to permeate it thoroughly. After a sufficient interval the pressure is released at a predetermined rate, and the rubber will expand to the limits of the mold, with the consequent formation of cells within the rubber. At this stage the rubber is allowed a rest interval before vulcanization. Finally the rubber may be cured in any preferred manner. The process applies to either soft or hard rubber compositions.

BIAS COVER BELTING. Construction has been perfected for rubber belting characterized by durability and by the absence on its surface of an excessive number of joints or splices. These features are obtained by utilizing bias woven fabric in place of short bias-cut sections of ordinary fabric spliced or sewed into long lengths. The inner plies of the belting are composed of layers of cord fabric.

WATERPROOF SOLE. A waterproof sole for leather shoes is provided in which the leather innersole is backed by a cemented-on thin layer of rag stock consisting of rubber and ground-up scrap fabric. This, in turn, is covered by a ply of uncured rubber composition covering the full area of the shoe bottom and sealing the inturned edges of the shoe upper. The depression thus formed is leveled with scrap fabric preliminary to application of the out sole.

SCRAP RUBBER CEMENT. A recently patented cement for the attachment of rubber to metal surfaces in the manner of the usual vulcanizable compositions is prepared as follows. One pound of pale crepe is dissolved in one gallon of benzol or any equivalent solvent. To this is added carbon black as a pigment and any suitable low-temperature accelerator in the proportion of one part to 100 of cement. Then are added 5 parts of 33⅓% latex to 100 of cement. The resulting cement mixture may be combined with the ground scrap filler by mixing equal quantities by volume of ground rubber and liquid cement.

Rubber Paints

Joseph Rossman, Ph.D.

THE following abstracts of United States patents continue the interesting and informative article on rubber paints started in our September issue.

54. Bruce, 263,317, Aug. 29, 1882. A roof paint consists of benzine, sulphate of iron, oxide of iron, asphaltum varnish, oxide of lead, japan, burnt umber, hard rubber, bisulphate of carbon, and coal tar.

55. Zook, Cornell, and Cornell, 265,389, Oct. 3, 1882. A paint comprises asphalt, gutta percha (or chip rubber), carbolic acid, oxide of iron, asbestos, slate dust (or marble dust), carbon bisulphide, japan, and coal tar.

56. Titzel, 266,223, Oct. 17, 1882. A paint formed of equal parts of raw resin oil and vulcanized rubber in solution is mixed with one part resin, 4 parts benzine, and a suitable pigment.

57. Brockett, 291,142, Jan. 1, 1884. A base for paint is made of pine tar, caoutchouc gum, gutta percha, gum-shellac, gum-copal or copal (oil) varnish, and linseed oil.

58. Petty, 301,149, July 1, 1884. Paint consists of coal tar, asphalt, japan drier, carbolic acid, Venetian red, rubber, sulphur, corrosive sublimate, and turpentine.

59. Keller, 343,906, June 15, 1886. A fireproof paint contains vulcanized rubber, japan drying varnish, coal tar, litharge, sulphuric acid, spirits of turpentine, red oxide of iron, yellow ocher, Venetian red, and artificial mineral wool.

60. Jordan, 355,019, Dec. 28, 1886. A paint consists of spirits of turpentine, gutta percha, Venetian turpentine, and a dry ground pigment.

61. Wilder, 372,733, Nov. 8, 1887. A paint for acid containers includes beeswax, paraffin, rubber, red lead, and litharge.

62. Bell, 397,105, Feb. 5, 1889. A paint for wood or metal is composed of petroleum tar, crude petroleum, boiled linseed oil, mineral paint, sodium chloride, rubber, lampblack, and glue.

63. Grover, 423,047, Mar. 11, 1890. A paint consists of rubber pulp dissolved in dead-oil of coal tar, a drier such as litharge, a varnish such as copal, a mineral coloring matter, and the distilled unbroken residuum of bituminous-gas coal tar.

64. Zook, 447,997, Mar. 10, 1891. A paint is composed of coal tar, oxide of iron, slate, chip rubber, asbestos, polish composed of rosin, benzine, crude carbolic acid, lampblack and asphaltum, creosote, benzine, and turpentine.

65. McAlpine, 467,106, Jan. 12, 1892. A paint is composed of coal tar, oil, japan, liquid rubber, nitric acid, slate dust, salsoda, potash, antimony, and sodium.

66. Grafton, 471,970, Mar. 29, 1892. A paint consists of asphalt, milk of lime, crude petroleum, turpentine, benzine, black varnish, dead-oil, rubber, burnt umber, and bone black.

67. Reaney, 474,693, May 10, 1892. A paint consists of zinc oxide, red lead, drop ivory-black, pulverized slate, raw linseed oil, spirits of turpentine, oxide drier, bisulphide of carbon, and rubber.

68. Hawkins, 493,999, Mar. 21, 1893. To prepare paint dissolve a suitable quantity of resin in benzine or gasoline; place the solution with lime treated with water to cause slaking so that the lime will slake in the solution and the steam generated will agitate and thoroughly mix particles of the lime in the solution; then pour off the solution from the lime and mix the dissolved rubber in the solution.

69. Depew, 582,046, May 4, 1897. A metal paint is made of rubber, powdered aluminum, and chloroform.

70. Walker, 678,922, July 23, 1901. A roofing compound consists of coal tar or pitch, rubber, gum-guaiac rosin, terra-alba or white clay, and wood ashes.

71. Lennard-Foote, 705,938, July 29, 1902. Paint for metal or wood contains one part talc, 2 parts kaolin, 3 parts silex, 2 parts corundum, ¾-part rubber, 4 parts zinc oxide, 1½-part saturated solution of alum, and sufficient of a mixture of sodium and potassium silicate to bring the paint to desired consistency.

72. Brasington, 713,846, Nov. 18, 1902. A paint consists of pure refined coal tar, gasoline, and rubber cement.

73. Pank, 763,421, June 28, 1904. Paint for iron pipes includes linseed oil, rubber, resin, beeswax, silica, red lead, and gypsum.

74. Upton and Fisher, 853,429, May 14, 1907. To make a solution for hard-rubber coating mill rubber with sulphur and cotton-seed and raw linseed oils and then dissolve in light petroleum.

75. Wykoff and Rishel, 869,123, Oct. 22, 1907. A paint for ship bottoms comprises linseed oil, rubber, sulphur, and alum.

76. Fischer, 910,520, Jan. 26, 1909. Dichlorethylene is used as a rubber solvent.

77. Coleman, 944,233, Dec. 21, 1909. A free flowing waterproofing filler for masonry comprises 12½ parts gum rubber cement, 6¼ parts spirits of turpentine, and 81¼ parts gasoline.

78. Ellis, 999,708, Aug. 1, 1911. A paint oil contains a solution of heat treated Pontianak rubber resin in a mixture of about equal parts of benzol and benzine; the concentration of resin is approximately 50%.

79. Ellis, 1,005,818, Oct. 17, 1911. A concrete paint oil comprises aluminum tungate and Pontianak rubber resin in about equal proportions in solution in a solvent comprising benzol.

80. Ellis, 1,006,737, Oct. 24, 1911. A cement coating composition contains Jelutong rubber resin, a thinner, and an acid body miscible with the thinner.

81. Bloch, 1,110,741, Sept. 15, 1914. The process of coating concrete comprises applying a fluent priming composition containing gum Pontianak and a fossil gum freed of saponifiable matter, and thereafter applying a main coating of another fluent material.

82. Schermerhorn, 1,204,697, Nov. 14, 1916. A protective paint consists of gutta percha, benzene, ether, rye flour, and plumbago.

83. Jacobs, 1,229,964, June 12, 1917. A paint oil comprises Para rubber 2 ounces; gasoline 32 ounces; petroleum 32 ounces; and oil of turpentine 224 ounces.

84. Coleman, 1,233,190, July 10, 1917. A waterproofing filler comprises an admixture of varnish makers' and paint makers' naphtha, rubber cement, paraffin wax, turpentine, and tri-chlorethylene.

85. Bryce, 1,341,704, June 1, 1920. A paint composition to deaden sound consists of 125 pounds of carbonate of magnesium and 100 gallons of vehicle consisting of volatile mineral spirits and rubber in the proportion of 47 gallons of the spirits to 11 pounds of the rubber.

86. Holzapfel, 1,393,220, Oct. 11, 1921. An acid-proof paint is formed of a rubber solution and titanium oxide less than 50% of the entire mixture.

87. St. John, 1,408,544, Mar. 7, 1922. A paint comprises a mineral hydrocarbon oil obtained from petroleum sludge and rubber gums in solution.

88. Pratt, 1,409,570, Mar. 14, 1922. A process of making an ebonite solution consists in digesting comminuted ebonite at a temperature of not less than 140° C. with a compound obtained by digesting spirits of turpentine with oxalic acid.

89. Magnus, 1,416,852, May 23, 1922. A base for paints consists of 40 parts by weight of raw linseed oil, one part by weight of rubber, and a drier.

90. O'Banion, 1,417,103, May 23, 1922. To compound an oil base for paints boil 50 gallons of raw linseed oil with 7 pounds of vulcanized rubber; cool the mixture, and then add 5 gallons of benzine and 5 gallons of japan liquid drier.

91. Holzapfel, 1,430,083, Sept. 26, 1922. A paint comprises stearine pitch, a solvent, and 1% of rubber.

92. Trevor, 1,436,736, Nov. 28, 1922. To produce paints dissolve rubber in oil at a temperature not less than 140° C. and not more than 170° C., using rubber in amounts from 1% to 50% of the oil; mix water equal to not more than 75% of the rubber and oil mixture into the latter by agitation, when the rubber and oil mixture has cooled, after having first been raised to a temperature not less than 260° C. and not more than 310° C.

93. Gower and Wolfe, 1,447,208, Mar. 6, 1923. A roof paint consists of coal tar 1½ quarts, melted rubber compound 1½ quarts, and varnish 1 quart.

94. Gardner, 1,492,027, Apr. 29, 1924. Latex paint is made as follows. One hundred parts of china clay and 100 parts of an opaque white pigment as lithopone or titanium oxide are mixed together and moistened with a small amount of a 10% solution of ammonia or a 5% solution of caustic soda. The mixture of pigments is then ground together with rubber latex, to which has been added one part of ammonia, or one part of a 5% solution of caustic soda to 10 parts of the rubber latex. The pigment and the latex are combined in suitable proportions to produce the desired fluidity. If desired, a small amount of a drying oil, as linseed or china wood oil, may be added to the alkaline latex and pigment composition. The oil may, if desired, be treated with alkali prior to mixing. A small amount of a resin solution or of a resin varnish may also be added.

Another example follows. Add a small amount of alkali to a paint composition containing lithopone, china wood oil, resin, and mineral spirits. Mix the resulting paint composition with about an equal quantity of rubber latex. A smooth coating composition is obtained. If in this example the alkali is omitted, the latex will coagulate. The use of a bactericidal compound, such as benzoate of sodium, as an addition to the alkaline stabilizing agent prevents fermentation.

95. Mitchell and Mitchell, 1,502,514, July 22, 1924. The process of producing a base for waterproof paint consists in confining a charge of commercial tire rubber, having fabric vulcanized therein, above a charge of rosin in an airtight cooker; maintaining the temperature of the rosin at substantially 450° F. until the resulting vapor from the rosin contacting with the rubber and fabric renders the former fluent; draining the fluent rubber as it forms into the heated charge of rosin; drawing off the mixture of rubber and rosin; removing, crushing, and grinding the fabric; and then mixing the crushed and ground fabric with the mixture of rubber and rosin.

96. Ellis, 1,541,693, June 9, 1925. A varnish reviver comprises halogenated rubber, coumarone resin, and a solvent of these materials.

97. Boehmer, 1,572,065, Feb. 9, 1926. A paint for concrete contains chlorinated rubber and at least an equal amount of coumarone resin, and a solvent for these materials.

98. Sheppard and Schmitt, 1,583,703, May 4, 1926. The process of making a flowable liquid coating composition comprises fluxing hard rubber with a resin and a drying oil; dissolving it in a liquid solvent of those ingredients; and mixing the solution with a solution of nitrocellulose in a solvent miscible with the first used solvent.

99. Shine, 1,588,150, June 8, 1926. The process of manufacturing paint consists in devulcanizing and fusing reclaimed rubber; mixing therewith a suitable quantity of fused resin and hydrated lime; adding thereto, while hot, a suitable rubber solvent thinner; and finally adding to the thinned mixture a quantity of zinc sulphate in an amount equal to about 10% by weight of the mixture.

100. Boehmer, 1,635,812, July 12, 1927. A liquid coating composition comprises a clear stable solution of chlorinated rubber incorporated with drying oil boiled to about the maximum degree compatible with the miscibility therewith of the specific chlorinated rubber employed.

101. Francis, 1,639,599, Aug. 16, 1927. To form a transparent paint composition finely grind inner tubes and rubber tires; mix approximately 3½ parts of the ground tubes and tires with approximately 5 parts of rosin; and boil the mixture until the ground inner tubes and casings have been dissolved.

102. Buttolph, 1,658,476, Feb. 7, 1928. A fluorescent paint comprises benzene, anthracene, rubber, and a vulcanizer.

103. Stine, 1,663,100, Mar. 20, 1928. To prepare a coating composition mix 10 parts by weight of unvulcanized rubber dissolved in a rubber solvent with from about 4 to 31 parts of a drying oil, and with an amount of drier equal to between 0.4 and 5.0% of the oil.

104. Stine and Coolidge, 1,663,101, Mar. 20, 1928. The process comprises incorporating suitable pigments or inert materials with a composition containing 10 parts of crude or unvulcanized rubber, from about 30 to 80 parts of a drying oil, a volatile thinner, and an amount of cobalt drier equivalent to from about 0.001 to 0.01% cobalt on the basis of weight of oil whereby, with exposure to atmospheric oxygen, the viscosity of the composition remains satisfactory for coating purposes over a period in excess of 2 days.

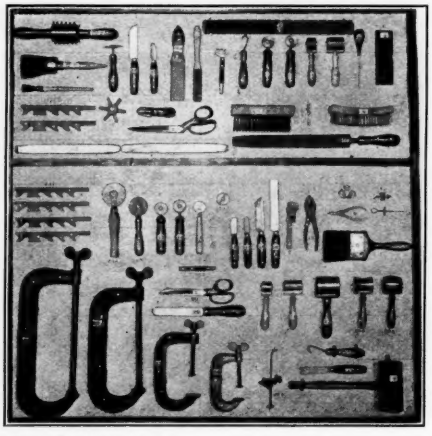
105. Coolidge and Eastlack, 1,663,119, Mar. 20, 1928. To make a coating composition mix a solution of rubber with a pigment which ordinarily gives rise to a lobbering condition, a drying oil, a metallic drier, and from 0.5 to 10% of oleic acid.

106. Biddle, 1,689,008, Oct. 23, 1928. A sanitary paint has the following composition in parts by weight: calcium rosolate and/or calcium hydroxide 10, water 10, rubber latex 2. Calcium rosolate may be used alone or mixed with calcium hydroxide or the latter may be substituted for the former if a less active germicidal coating is desired, as for use in painting the walls of a dwelling. To the ingredients may be added suitable pigments, such as whiting, china clay, and other coloring materials, preferably inert, to give body or color or a desired degree of opacity to the coating. To the ingredients may

(*Continued on page 42*)

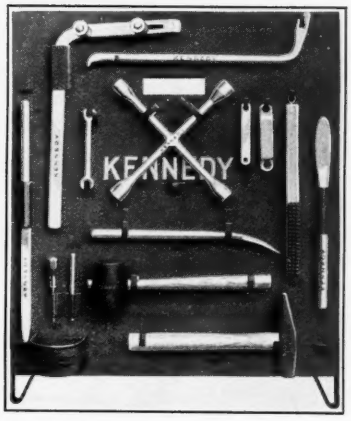
Retreading Shop Equipment

D. C. McRoberts



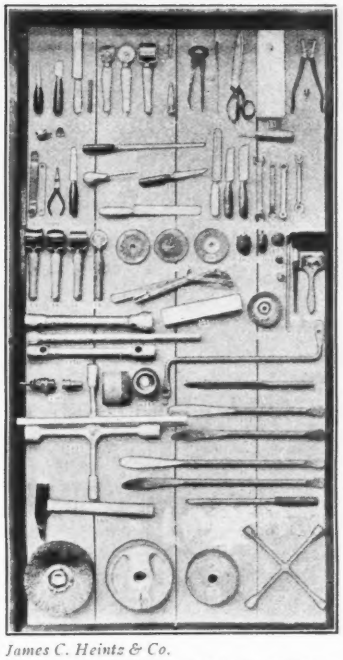
Chas. E. Miller Corp.

Fig. 1. Rubber Working Tools



Kennedy Co.

Fig. 2. Tire Tools



James C. Heintz & Co.

Fig. 3. Rubber and Tire Tool Assortment

CLEANLINESS of work and efficiency of operations are very important considerations for the successful and permanent conducting of a retreading business. Selection and arrangement of the housing quarters, therefore, become automatically the first equipment problem to be settled, whether the project is to be a small custom shop or a large rebuilding plant.

Shop Arrangement

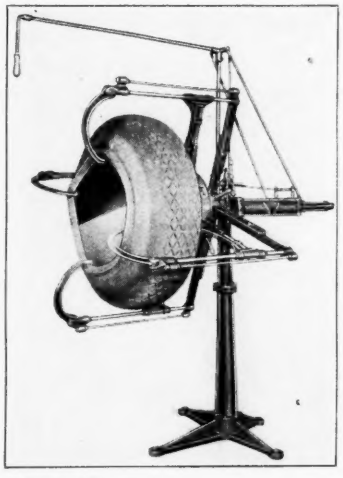
Departmentalizing according to sequence of operations and locating the equipment for each operation should be done with careful deliberation after obtaining the helpful advice of equipment and repair material manufacturers, who have made a point of rendering such service. Without going into detailed suggestions of shop layout, it does seem important to emphasize the advisability of separating either by distance or partitions such unavoidably dirty and dusty operations as buffing, cutting down, and inspection from cementing, drying, and covering. A warm room for cement drying will also pay large dividends in reduction of curing troubles and hidden, but damaging, defects in the finished job.

Hand Tools

A wide variety of small hand tools is an inestimable asset to any shop. To select a few knives, shears, brushes, stitchers, etc., seldom ever proves wise economy as unexpected conditions are continually arising where the unusual type of tool permits of quickly and easily meeting the situation, if at hand; whereas the usual type causes needless waste of time and perhaps even poor workmanship, because it is not suited to such emergencies.

Most shop equipment suppliers furnish assortments of rubber working tools, tire tools, and combination sets. (See Figures 1, 2, and 3.)

Tool boards with provisions for holding each tool in

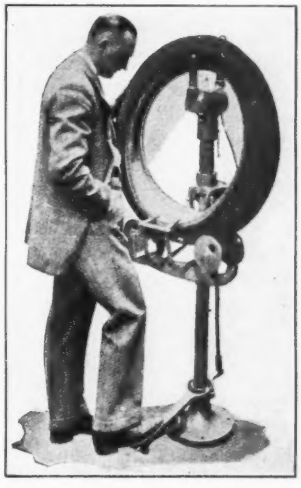


Kohawke Mfg. Co.

Fig. 4. Giant Tire Spreader

Branick Mfg. Co., Inc.

Fig. 5. Branick Spreader

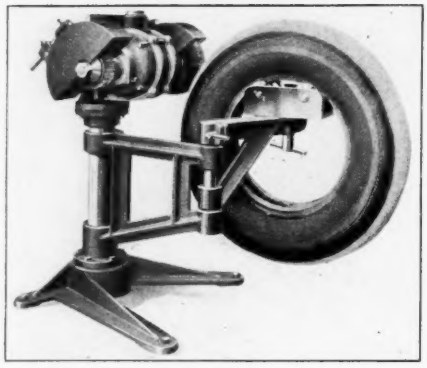


Ramsdell Mfg. Co.

Fig. 6. Foot Power Spreader

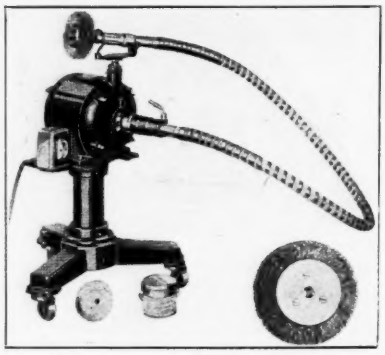
Chas. E. Miller Corp.

Fig. 7. Hand Operated Spreader



Super Mold Corp.

Fig. 8. Lodi Buffer with Tire Support



Haywood Tire Equipment Co.

Fig. 9. Flexible Shaft Buffer

proper place are not only useful, but add to the orderliness of the shop. These may be constructed to individual design or in some instances obtained with the tool assortment.

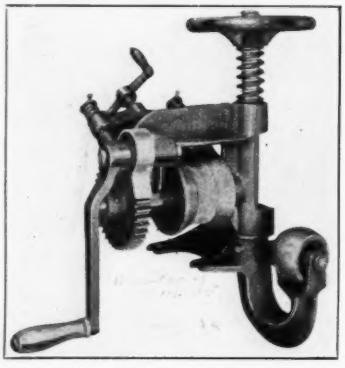
Tire Spreaders

High order retreading begins with meticulous inspection of the entire casing both inside and out. Various kinds of defects, many hidden from view, often exist in a used tire that can be detected only by distorting the casing by spreading the beads.

A great variety of machines is available for this purpose, but they all fall into one of 2 general classes: the first separates the beads of the whole tire, which permits revolving so that the operator's undivided attention can be given to the duty of inspection; the second separates the beads of but one segment of the tire at each setting, thus necessitating repeating the spreading operation several times to inspect thoroughly the entire circumference of the casing. Both classes are equally efficacious so far as proper quality of inspection is concerned. Which kind to select is primarily a matter of the user's preference of mechanical principles, volume of inspection to be done, and the amount of original investment.

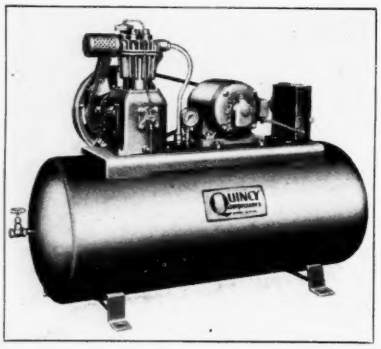
Spreaders should be used to facilitate placing airbags in tires. The life of the bag, particularly the heavier type, is thereby prolonged since cross-sectional distortion is reduced to a minimum.

The spreader illustrated in Figure 4 is representative of the first mentioned class. It grasps the tire beads on opposite sides at 4 different points with malleable steel hooks, which open the tire and close it again by means of a double acting air cylinder. Quick diametric adjustment of the hooks adapts this machine to use on all sizes of tires having rim diameters ranging from 14 to 24 inches inclusive. Its sturdy construction and air cylinder power are such that it will accommodate all kinds of tires, including the largest high-pressure truck type, and will give a bead spread up to 14½ inches.



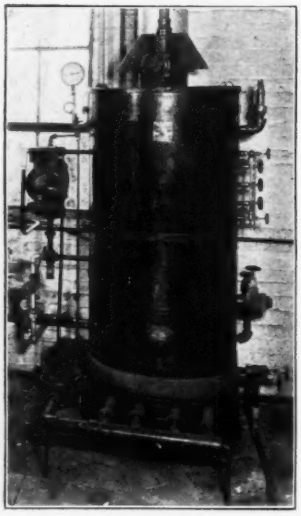
Western Vulcanizing Equipment Co.

Fig. 10. Tread Roller



Quincy Compressor Co.

Fig. 11. Air Compressor

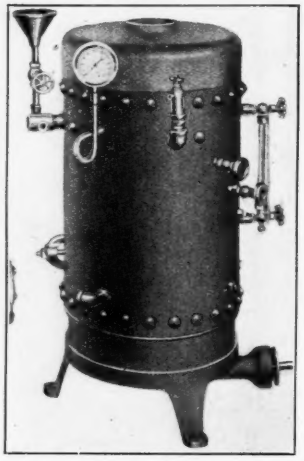


Mears-Kane-Ofeldt, Inc.

Fig. 12. Gas Fired Boiler

Another spreader of the first classification is shown in Figure 5. The operating principle is similar to that previously described, but differs in mechanical design. The entire casing is quickly spread with 2 wide trussed arms contacting the casing on opposite sides.

A machine representative of the second mentioned class is shown in Figure 6. This spreader has but one set of hooks operated by foot power to open the bottom portion of the tire. The tire can be held in an open position by applying pressure to the front part of the foot pedal, which engages pawl and locks the spreader. The tire, held upright by a lateral support attachment, rests on rollers fixed at either side of the spreader hooks; which position facilitates the revolving of the tire for inspection of its entire circumference.



Western Vulcanizing Equipment Co.

Fig. 13. Tubular Generator

A very efficient hand operated spreader of the second class is shown in Figure 7. It is light, but sturdy, and can be quickly adjusted to spread all passenger sizes and trucks up to 7-inch. The tire is locked in an open position

when the toggle action lever is below the horizontal position.

Foot power machines are for use on passenger and the smaller truck sizes of tires. The larger truck sizes are too heavy and stiff to be handled without power. Machines of this class, however, are constructed with power mechanism. Both classes are designed for pedestal or wall support, power or hand operation, and with or without lighting fixtures for illumination of the inside of the casing.

Tread Grinders and Buffers

One of the preferred methods of removing the tread of an old tire involves using a stand grinder. Ruggedly constructed double-end grinders, with either motor or belt drives, can be obtained from numerous manufacturers. All these grinders can serve a variety of purposes in the shop in that they can be fitted with rotary rasps, wire or rag buffers, and grinding wheels.

Figure 8 illustrates an individual motor type of grinder. Attached to the stand is a device to support the tire while the operator is grinding off the tread and later roughening the remaining cushion gum and sidewall edges with a wire buffer. A pair of rollers mounted on the flexible swinging arms takes the weight of the tire and guides it to any desired position of contact on tread or sidewall. This device can be locked in any fixed position by set screws provided in each of the flexible joints.

Another convenient piece of equipment for buffing and grinding certain types of work, difficult, if not impossible to do on the stand grinder, is the flexible shaft buffer shown in Figure 9. Buffers of this type are manufactured with portable stands, attachments that will allow swinging them from the ceiling, or bases for placing them on the bench. Such machines are particularly suited to roughening the edges of a sidewall after the tread has been removed, also to buff any portion of the inside of the tire.

Tread Roller

Very particular care must be used to remove all trapped air from beneath the camel back after it has been applied to the tire. This work cannot be satisfactorily done with hand stitchers even on smaller sizes of tires, and on the larger ones amounts almost to foolishness. A mechanical roller must be used that is constructed to exert great pressure to all parts of the newly applied tread.

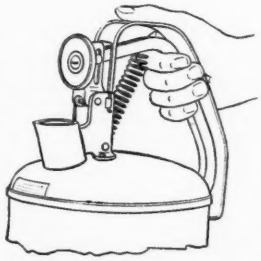
Such a device is shown in Figure 10. The head or roller assembly part of the machine is mounted on a 1⅜-inch frame post threaded at the top for raising the head to apply the tire and then pressing the rollers against the tread. The head swings to one side further to facilitate mounting and removing the tire. A U-shaped extension of the frame supports a convex roller that serves as a base upon which the tire is held while under pressure of being rolled. Hand power operates the roller at a 3:1 gear ratio. Another attachment to this machine, partly obscured from view in the illustration, consists of a convex roller adjustable to fit against the concave tread roller. This is a tread removing addition and can also be used to apply camel back while rolling it down.

Taylor Instrument Cos.

Fig. 14. Thermo-Steam Gage

Western "Dri-Kure" Mfg. Co.

Fig. 15. Thermometer Test Assembly



American-La France & Foamite Corp.

Fig. 16. Justrite Safety Can

Air Compressors

Perhaps the least conspicuous, yet the most generally needed, piece of equipment in the shop is the air compressor, especially in the custom shop where car service is rendered. Compressors are obtainable in numerous engineering designs and capacities. The most commonly used type, probably, is some form of individual motor driven pump and tank combinations, although available space, line shaft sources of pump driving power, and design preferences of the individual should determine the type to install. See Figure 11.

Steam Generating Equipment

An adequate supply of high quality steam is of vital importance to proper retreading. No matter how good the quality of materials used, or how high the character of workmanship employed, or how excellent the curing equipment at hand, the retread job will be unsatisfactory unless the vulcanization is perfect; and this perfection can be obtained only when well-designed curing equipment is supplied with an abundance of dry hot steam maintained uniformly at the required pressure at all times.

Boilers are manufactured in the greatest imaginable number of sizes and designs, from which can be selected that type which will properly suit the requirements of any size or layout of shop. Coal, gas, or oil fired tubular or shell type boilers can be obtained in almost any size, from that suitable for operating one piece of vulcanizing equipment up to the largest number that any shop may ever have use to install. Figures 12 and 13 illustrate but 2 of the many types available that can be fitted for either gas or oil burner firing.

It is very important to remember that rubber compounds are vulcanized by temperature, not pressure, although most curing tables are expressed in terms of pressure, but it is always done with the understanding that the steam at that pressure is of high quality and, therefore, of the proper equivalent temperature. Since water or air logging of the curing equipment can and often does happen with an appreciable drop in temperature, but no change in pressure, the best practice is to fit the vulcanizers with circulating sockets and thermometers (see Figure 14) instead of or in addition to pressure indicating gages, which are too seldom correct. These attachments are relatively inexpensive and will quite likely save their original cost in a very short time in reduced replacements alone. A rubber plant would hardly attempt to operate without thermometers on curing equipment, but practically all repairmen seem to have the erroneous idea that a repair job does not need overly exacting care to that chemical change known as curing or vulcanization.

If steam indicating gages are used, tests of their accuracy should be made frequently. This work can be done easily and quickly by substituting a thermometer test assembly, which consists of a mercury thermometer, master steam gage, and pop valve assembled with appropriate fittings into a single piece of equipment, as illustrated in Figure 15.

(*Continued on page* 41)

Rubber-Paved Tennis Courts

A Timely Suggestion for Improving Technique

Allan Williams

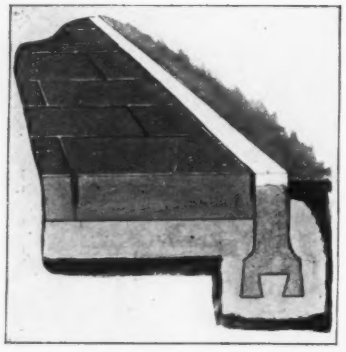


Fig. 1. Rubber Court with Concrete Base

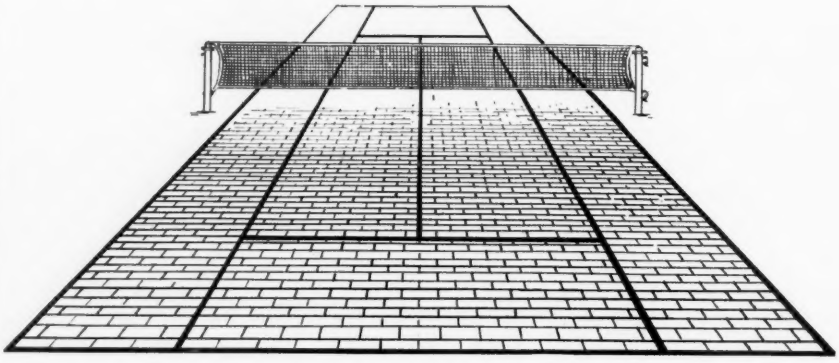


Fig. 3. Standard Tennis Court Paved with Rubber Blocks

THE present-day blue clay tennis courts are far from satisfactory as regards condition for play. Blue clay courts, 36 feet by 78 feet, with 6 feet on each side, 18 feet additional back court, and a 10-inch blue clay fill, cost from $3,500 to $4,000. After a rainstorm clay courts need more or less repairs by building up with clay and remarking the lines with lime or cotton tape. Also in hot weather they become dusty and cause discomfort to players.

Advantages

These inconveniences can be eliminated at moderate initial cost by paving the court with rubber tiling properly laid and with rubber marking lines embodied in its construction. The estimated cost of a rubber court of standard dimensions with a 4-inch concrete bed is approximately $7,000 to $8,000 and would require no upkeep. A machine-surfaced rubber pavement of that sort is neither glossy nor slippery, and can be used as well in winter as in summer. After rain it requires only a squeegee rubber to remove the water and final drying with a mop for the court to be in prime condition for play.

Methods of Laying

Figure 1 shows the method of laying rubber blocks across a tennis court, abutting against the outline of the court. The blocks are secured in 4-inch concrete by means of their dovetailed underbody. Each block is so constructed that a watertight sealing joint can be made to be used for the pavement.

In paving a court on a concrete base the guide strips are first laid out according to standard tennis court measurements and embedded into concrete with the dovetail locking it into place either level or slightly inclined as desired. The blocks are laid tight against the guide strips, beveling on the end in contact with the strip, to allow a $^3/_{16}$-inch sealing joint. After the laying is completed and the concrete has solidified, the joints are filled with sealing pitch which becomes semi-hard. The entire surface is then smoothed off with a surfacing machine.

Figure 2 shows how a rubber tennis court can be laid on wood as a base. The guide strips are nailed at both sides, and the blocks nailed on each side, and then finally sealed to keep them watertight. The guide strip at the side marks the boundary of the court pavement. It has a cream color or yellow top surface to make it outstanding.

Figure 3 shows how the paving blocks would be laid on a tennis court. The outlines would be cream or light yellow, and the blocks and sealing joints black, so that the outlines will stand out in contrast against a solid background. The joints being $^3/_{16}$-inch wide are scarcely noticeable.

The sheet rubber tennis courts that were tried out in England some years ago did not prove satisfactory.

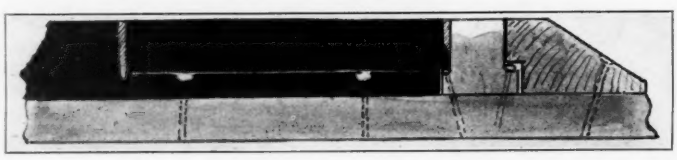


Fig. 2. Rubber Blocks Laid on Wood

Supervision?

The lower door on a Banbury mixer had stuck; the air pressure was being used to open the door and also was being pried to relieve the wedge, when the door loosened up suddenly, opened, and fell on the foot of an employe. In his eagerness to help he had got around in front of the door and was an easy victim in this accident. He had been warned to keep to the side out of danger. Oh yes! There were fractures of 4 metatarsals in his left foot. Unfortunately he was not wearing safety, shoes. *Rubber Section, N. S. C.*

The Awakening East

III—Malaya

William B. Wiegand [1]

WHILE coasting down the South China Sea, dodging fishing junks, the Indian staff officer at our dining room table gave us a rude jolt. We had just straightened out on our course after leaving behind us the unforgettably beautiful harbor of Hong Kong, still marveling at the imposing rock of the main island, flanked by guardian islets and backed by the 300 odd square miles of leased territory on the mainland to the North.

"Another Gibraltar," we had said to ourselves.

"On the contrary," said the Lieutenant Colonel, "Hong Kong is essentially highly vulnerable to a combined land and sea operation and would probably be evacuated in case of attack by any major power."

"What would poor, old John Bull do then?" was our natural query.

"Singapore," was the cryptic reply.

Malay Native Boys

Malayan Jungle

The reader may inquire why questions of defense should have so frequently appeared in these casual travel notes. The answer is that they are on the tongues of the people who live in these outposts of European domain. They are inherent in the problem of "The Awakening East." As for Singapore, the guardian of India, it too is an island flanked by numerous islets, separated from the mainland of the Malayan Peninsula by the narrow strait of Johore. Like Hong Kong, it is a crown colony directly governed by an appointed administrator aided by numerous native (Malay) sub-officials, and as a consequence is the Mecca for emigrants from China and India; but there the similarity ends. Singapore is nearer "home" and in many other respects, discussion of which would take these notes too far afield, is strong where Hong Kong is weak. Suffice to say that the writer of these notes has no hesitation in recommending the investment of surplus (!) capital in the Malayan Peninsula.

To the visiting rubber technologist, whose acquaintance with his material has for so long been largely confined to the processing of sheets or crepe, Singapore appears as the gateway to a new realm.

So he tarries for only a few days in the polyglot capital, the more so since he finds hotel prices outrageously high when compared with those of Hong Kong, Shanghai, Tokyo, or Yokohama, to say nothing of various "squeezes," perhaps the most callous of which is the baggage transfer "racket" as practised by all the hotels and which, for the protection of readers who may soon become visitors for the first time, really deserves a momentary digression, the more so since the remedy is so simple.

When your ship docks, the suave "runner" of a crack Singapore hotel meets you on deck and advises you to leave the whole baggage transfer question to him, ushers you into a waiting car, and whisks you to your destination which is only a couple of blocks distant; and you later find on your hotel account the neat debit entry of $6.00 (S) plus any tips you may have been foolish enough to give to the coolies at the hotel end. And now for the sophisticated way. You have the dock coolies transfer your luggage to a meter taxicab and tip them 10 cents (S) for each bag; drive alone to your hotel at a total cost of, say, 30 cents (S), and the hotel coolies have got to place your bags into your room gratis —total cost $1.50 versus $6.00! Probably nowhere else in the Far East will you find the hotel luggage "squeeze" so flagrant, and it is hoped that these lines may reach one or two travelers in time to save them damage to their pocket-books and to their *amour propre* which in the East must be preserved, come what may.

But before leaving Singapore to plunge into the jungle and study rubber trees you must make one or two calls. You must come with an introduction to Mr. M. A. Cheek, No. 1, at Goodrich (S.S.), Ltd. for, in addition to whisk-

[1] Director of research, Binney & Smith Co., 41 E. 42nd St., New York, N. Y.

ing you about and showing you a magnificent golf club and a luxurious swimming club and entertaining you with tales of big-game hunting, which has been his life-long hobby, Mr. Cheek can give you the background of crude and plantation rubber in all its *minutiæ*, whether in Brazil, Africa, the Dutch East Indies and Malaya, or Siam and Indo-China.

Also you must call upon the Singapore Rubber Works, which is tantamount to visiting Mr. C. Huisken, the managing director. Here you will find a *rara avis*, viz., a rubber concern which has declared (and earned) a dividend throughout the whole of this depression and for 20 years before it. The secret is simple: management. Comparisons, being odious, will not be specifically made, but whereas other local concerns found it impossible to withstand the low-price competition of Japanese and Chinese rubber manufacturers, Mr. Huisken won out by an expedient which reflects much credit upon him and upon his race, for he is a Dutchman. Whenever an article became available at selling prices lower than his manufacturing cost, he accepted the inevitable shrinkage in sales, but did not lower his own prices to the point where red figures would result. He sold a lower volume at fair and profitable prices, *but* proceeded to perfect a new line of merchandise not being made by his low-cost competitors, the sale of which was profitable, and the added volume thus obtained sufficed to maintain his P. & L. figures in the black.

Simple? No—because behind the new additions to his line of merchandise lay grueling technical study and experimentation. This incessant seeking out of profitable goods, instead of dogged persistence with unprofitable, is a principle of management which might well merit a place on the polished desk of highly placed executives in more northerly climes!

It is true that you will miss Mr. Huisken at the Swimming Club, sipping champagne cocktails with the Beau Brummels of Singapore from 4 o'clock till dinner time, but you will find in him and his charming wife and in their restful home and family life a poise, a sanity, and a pervading youthfulness that will stick in your memory of the tropics.

But this is not crude rubber! After all you are mostly interested in seeing with your own eyes the bleeding wound of *Hevea B.*, and in learning about all the recent triumphs of bud-grafting, "forestry," etc. So you embark on the handy little 500-ton coasting steamer "Perak," of the Straits Steamship Co., thread your way through tropical islands toward the setting sun, then northwestward, and next morning you are at Port Swettenham up the Malayan coast. From there a pleasant hour's drive through jungle and "rubber" brings you to Kuala Lumpur where you tarry a few days to meet the intellectuals of the R. R. I., the famous Rubber Research Institute.

By all odds the most impressive visit will be to its experimental station, a magnificent plain of several thousand acres, all visible from an elevation, and furnishing in itself an attractive panorama of the jungle as it is and again as it appears when scientifically planted.

If you are fortunate enough to have Dr. Moore conduct you about, you will hear the seasoned comments of a scientist who has himself been a rubber grower. Through him you are introduced to Mr. Foston, the active head of the station, and at once you are thrown into a whirl of demonstrations that leave you breathless. Nearly every conceivable variable in the preparation—clearing, burning, planting—and in the care during maturing of the trees is being evaluated by actual test plots against controls, a piece of work of first-class importance to every rubber grower, large or small, but one requiring a high degree of common sense and shrewdness in interpretation of the experimental results as they one by one reach a definite stage.

In general you learn that the old idea of clean weeding is gone for good, leaving the soil at the mercy of the elements. You learn about burning without scorching, about "protection" without too much "competition," and perhaps most interesting of all you are shown the bud-grafting operation, a deft procedure with astonishing effects on rubber yield. Mr. Foston lives with his job, his house receiving all the ardent rays of sunshine and humidity which make rubber trees thrive, but which sometimes dampen both the clothing and the enthusiasm of a visitor more at home in the sub-Arctic snows of Canada!

Anent the climate, it must be kept in mind that the temperatures are in themselves moderate; it is the humidity which, nearly always close to saturation, so disturbs the "comfort factor" of Europeans. The concern which first offers to the tropics a *de-humidifying* system of air conditioning at low cost will meet with an overwhelming demand.

To the Institute itself you must devote as much time as you can spare. Col. B. J. Eaton, the director, whose own researches are, of course, classic, must now pay the penalty of success—and direct the work of others, in numerous departments which receive his integrating and directional guidance. But he is still a young man, and one day he will emerge from some secret laboratory with a wilted collar, a twinkle in his eye, and another important discovery "off his own bat"—the secret ambition of many a director of large research organizations.

An important department of the R. R. I. is that of keeping the grower advised of the latest discoveries and interpreting them in a practical way. This division is under the direction of Mr. R. O. Bishop, who will be remembered as having recently visited in America when he made many contacts with the leading consumers and technical heads, a liaison of obvious advantage on both sides of the Pacific.

The various research heads are outstanding specialists —young men with brilliant records who have come from England's best universities to "the coast of Mandalay where the flying fishes play," but where they themselves work, and work hard, for the advancement of one of His Majesty's dominions across the sea. Doctors Rhodes, Wiltshire, Hastings, Moore, these are some of these gentlemen we met, and it is hoped that despite the convenience of Suez they may more frequently go home on leave via the United States or Canada, and so give to their largest customer a chance to meet them and to exchange views besides which enabling them to study at first hand that latest triumph in *Ars Elastica Americana* —the Rubber Dollar!

So, your visit to Kuala Lumpur over, you embark again on the coastal steamer where, like as not, you will meet rubber estate managers en route home on leave and so pass the time listening to their gossip of rubber growing. You get some surprising bits of information this way. You learn, for example, that native estates frequently produce cleaner and better sheets than European owned estates, but get a full cent less per pound on the Singapore market! You learn that the secret of good management is not the occasional visit of a V. A. (visiting agent), however competent, but a conscientious resident European who gets up at 5 every morning to supervise the tapping, etc., and to make sure that *all* the output of the estate goes to its credit.

Your steamer stops at Malacca, and you go ashore to visit the fascinating ruins of ancient fortresses where Portuguese fought natives, Dutch fought Portuguese, and

which now for over a century have sheltered the British administration, for Malacca is a crown colony and not a part of the F. M. S. Here too is the shipping port for important rubber estates such as Dunlops. Our steamer's hold bulged with neat Hessian bales of rubber stenciled in letters 6 inches tall, "Firestone—Los Angeles," and one of the estate managers who was looking on remarked,

"The Firestone buyer in Malacca is one of the shrewdest and best in the East. I know because I have sold him."

Then you learn about London standards versus Singapore standards of quality—and how absolutely vital to the quality of a tire is the absence of specks in the smoked sheets!!

The impression of our first, and probably last, visit to a rubber "factory" where latex was converted into sheets or crepe was that modern engineering could do something toward integrating and streamlining the procedure, including the air drying and smoking stages.

The thought also came up that something might be done at the plantation toward plasticizing the material, either chemically or mechanically or both, but such developments would seem likely to be slow so long as the present agency system stands between the plantation and, let us say, the American consumer.

It seems to the present writer incongruous that an up-to-date mechanical rubber plant should not be able to address technical letters direct to the plantation producing its crude rubber. Such a contact would in a few years revolutionize plantation procedure and make possible the production of special types of rubber for each division of the industry.

The present agency system seems to be an expensive barnacle on the bottom of the good ship "Plantation Rubber," and the sooner it is scraped off the better.

As for restriction, opinion on the spot is, on the whole, that it can be made to work and that the Siamese and Indo-China situation is not so serious as stated in some quarters. The speculation in shares has been foolish and in most cases has driven them to values far beyond actual worth. There is a great deal more of potential rubber than the present market is even now able to consume, and it is devoutly to be hoped for that the selling price will not be pushed so high as to arrest the development of new uses. Even at 6d. the use of reclaimed and of diluent pigments is sure to increase, has in fact already done so.

After all, *restriction* is a word of rather baleful import. "Closer cooperation" not only sounds more cheerful, but seems, at least to the writer, a development long overdue. The general manager of every rubber concern in Canada and the U. S. A. ought to visit Malaya and establish liaison with one or more plantations and buy at least a part of his crude requirements direct. For the rest, the voyage will relax his nerves, and he will at least return with a clearer understanding of the "Call of the East"—viz.—"Boy, two whisky-sodas."

Retreading Shop Equipment

(*Continued from page* 37)

The steam circulation system, which is completed by the pipe fittings connecting boiler and vulcanizer, is a matter of utmost importance. Exact piping arrangements for the particular shop and equipment under consideration will be furnished by the equipment manufacturer and should be followed implicitly during installation.

Tire Wrapping Machine

Paper wrapping preserves the quality and appearance of retreaded tires just as effectively as it does for new tires. Shops doing a commercial business or those carrying a stock of retreaded tires may well consider wrapping them. One type of hand operated machine will spirally wrap all sizes and kinds of tires up to and including 7.50-inch balloon, quickly and neatly.

Safety Cans

Inflammable liquids, such as cements, solvents, and paints, constitute dangerous fire hazards unless handled in a suitably designed container. Suitable designs, with Underwriters' Laboratories, Inc., approval, are obtainable in a variety of sizes and for almost any kind of liquid or type of operation. Figure 16 illustrates one type for safely handling a supply of solvent in the shop or factory.

Miscellaneous Shop Equipment

It is not the province of this article to attempt to portray and describe every item of shop equipment any more than to detail the exact layout of a shop, but rather to set forth the most important items universally common to all properly fitted quality shops. Benches, tables, shelves, tire racks, etc., after all, are very necessary to the conduct of the business, but will and should be designed to suit the particular space available and the particular fancies of the owner. Most of such items can be purchased, but it is usually not only more suitable, but more economical, to build them on the location.

Poured Printing Plates

A GERMAN method of making molded rubber printing plates is outlined below. Any non-meltable material that will hold a sharp impression will serve successfully as a mat for the process. Rubber, lead, or paper are preferred for the purpose in the order named. Rubber is easiest to handle, retains the sharpest outlines, the finest details of halftones, and does not warp on the edges as is the case with lead and paper; therefore it is recommended particularly for fine work. Under light pressure the rubber mat is molded and cured at 266° F. in from 3 to 5 minutes. The cured mat is prepared for pouring the plate by fastening it with quick-setting glue to a thick sheet of glass. The edges of the mat are surrounded with a rim of putty gaged off about ⅛-inch in height to assure suitable thickness for the finished plate.

A small quantity of printing plate material is next poured into the center of the mat and quickly rubbed over its entire surface; the fingers are used on screen relief, and a brush in case of type or sharp lines. A second layer is then poured and spread, followed by a third and a fourth layer, each leveled by spatula.

The poured plate is next set aside exactly level and allowed to rest 12 to 14 hours; after which time it is finally dried and vulcanized by slow stages in a gas oven. Two hours are required for vulcanization at a progressively rising temperature from 122° to 257° F. The cured plate can be easily separated from the mat when cooled.

THIOKOL IS UNDESIRABLE TO ADD TO DUPRENE. It increases permanent set and decreases resistance to high temperatures. It reduces swelling in oil, but after removal the strength is removed. Thiokol is expensive and not good pigment bearing.

"Acticarbone" Solvent Recovery

An Economic System for Saving Rubber Solvents

THE absorption by carbon of color and dissolved impurities from solutions of raw sugar by filtration through animal charcoal followed the discovery of the special absorptive quality of that material in 1812. This principle was utilized similarly for decolorizing oils. The method of absorption was virtually confined to sugar and oil refining until 1914. Then the production of carbon with maximum absorptive capacity assumed greatly increased importance during the World War as a means of defense against poison gas and for industrial economy as well. In consequence the activated carbon known as "Acticarbone" was developed, possessing high activity to absorb gases, vapors mixed with air, non-absorbable gases, or mineral or organic substances held in solution. It also has suitable density and hardness for compactness and resistance to abrasion owing to handling.

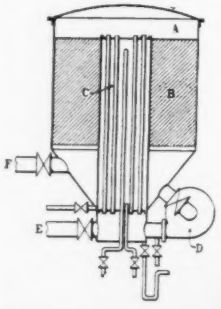


Fig. 1. Solvent Gas Absorber

Method of Manufacture

The following outline of the process of activation used in producing "Acticarbone" is quoted from an authoritative source.[1] The process is based on the physical principles of activation of carbonaceous matters by hot oxidizing gases. Wood charcoal is generally used as the raw material, and no previous chemical treatment is given. The charcoal is subjected to an action in chambers with porous walls, which are surrounded by the activating gases at high temperature. Endosmosis occurs through the walls, and in this way a controlled and selective oxidation of the charcoal takes place, resulting in its activation to the degree required. Hardness and durability are obtained by preparation of the charcoal before activation. The fibrous structure of the wood is retained, and the "Acticarbone" so produced is remarkably pure and quite free from acid or metallic impurities.

Industrial Applications

The absorptive effect of activated carbons is applied for the separation or recovery of volatile solvents such as naphtha, benzol, alcohol, etc., when mixed with air or other non-absorbable gases. Such conditions arise in the rubber industry, notably in solvent rubber cement mixing; spread coating such cement stocks for rubber proofing textile fabrics; producing seamless goods by the dipping process; in drying chambers; and in applying liquid saturants to textiles. Volatile solvents are present in each of those processes, and its removal and recovery are desirable on the score of efficiency and economy, lessened fire risk, and pure healthful atmosphere in the workrooms.

Properly designed hoods and ducts are arranged to collect and convey the solvent vapors to an absorber indicated in Figure 1; the features of which follow. The closed container *A*, charged with "Acticarbone" *B*, is traversed vertically by a tubular heat exchanger *C*, which can be heated by steam or cooled by water circulation. The solvent-air mixture is drawn into the absorber by the fan *D* through the duct *E*. After absorption of the solvent by the carbon the air is expelled through the outlet pipe *F*.

Fig. 2. Solvent Recovery System in the Spreader Room of a European Rubber Factory

This recovery system can treat very dilute mixtures. The absorber can give 90 to 95% recovery of their intake and an overall efficiency from the works of 75 to 80%, representing a most desirable economy, advantage of which is being taken in important rubber plants, notably in France, Belgium, and Italy.

[1] "The Activated Carbons 'Acticarbone' and Their Industrial Applications." S. Reginald Price, *Ind. Chemist*, Apr., 1930.

Rubber Paints

(*Continued from page* 34)

also be added other colloidal substances acting as supporting colloids in aqueous dispersion such as glues, casein, starch, and similar ingredients.

107. Ellis, 1,695,638, Dec. 18, 1928. A varnish comprises chlorinated rubber, tung oil, and a volatile thinner.

108. Stine and Middleton, 1,700,778, Feb. 5, 1929. The process for preparing paint comprises mixing 10 parts of unvulcanized rubber dissolved in a rubber solvent with 20 to 50 parts of a drying oil and cobalt drier up to about 0.1% cobalt on the basis of weight of oil; thinning with a volatile solvent to a suitable consistency for coating purposes; and incorporating therein an amount of hydroquinone equivalent to from 1% to 10% of the weight of rubber contained in the composition.

(*To be continued*)

Annals of Rubber[1]

Chronological Record of the Important Events in the History of Rubber

1823. Five hundred pairs of rubber shoes are imported from Brazil into Boston, and, although thick, heavy, and ill-shaped, find a ready sale.

1823. MACINTOSH (Charles), of Glasgow, Scotland, obtains in England, June 17, his first patent for the manufacture of the justly celebrated waterproof double textures. The circumstances which led to this invention are furnished by George Macintosh in a memoir printed for private circulation. He says: "Mr. Charles Macintosh, chiefly with the view to the production of ammonia to be employed in the manufacture of Cudbear, entered, in 1819, into a contract with the proprietors of the Glasgow gas works, to receive for a term of years the tar and ammoniacal water produced at their works. After the separation of the ammonia in the conversion of the tar into pitch, to suit the purposes of consumers, the essential oil termed naphtha is produced; and the thought occurred to him of its being possible to render this also useful, from its powers as a solvent of caoutchouc or india rubber. By exposure to the action of the volatile oil termed naphtha, obtained from the coal tar, he converted this substance into a water-proof varnish, the thickness and consistency of which he could vary according to the quantity of naphtha which he employed in the process."

He dissolved shreds or parings of caoutchouc in the coal oil by trituration with heat in a close iron vessel, producing a thick varnish, "resembling transparent honey," with which he coated 2 layers of cloth, silk, or other material, which were afterwards pressed together to preclude the passage of air or water. These were at first called "Water-proof Double Textures," but soon came to be universally designated by the name of "Macintoshes."

1823. HANCOCK (Thomas) obtains in England his second patent, March 22. This is "for an improvement in the preparation, for various useful purposes, of pitch and of tar, separately or in union, by an admixture of other ingredients with either or both of them." Mr. Hancock's claims to compounds of rubber, pitch, and asphalt are embraced in his patent of November 21, 1843.

1824. HANCOCK (Thomas) obtains his third English patent, November 29. This is "for improvements in the method of making or manufacturing an article which may be, in many instances, substituted for leather, and be applied to various other useful purposes."

During the previous May, Hancock had received from Central America a considerable quantity of the caoutchouc juice, as drawn from the trees. The liquid was of the consistence and color of thick cream and, when exposed to the open air in the sun, or in a warm room, became inspissated, forming a substance exactly resembling crude india rubber. Hancock's process was merely to take this liquid in its natural state and to saturate with it either felt, carded cotton, wool, or hair, in combination with other fibrous substances, such as hemp and flax, and to subject the whole to pressure.

1824. FLEETWOOD (Charles Bagenall) is granted an English patent for a waterproofing liquid and composition made by dissolving 10 pounds caoutchouc in 20 gallons of pure spirits of turpentine, the vessel containing which is immersed into a boiler filled with cold water, which is afterward brought slowly to a boiling point.

1824. WEISE (William Philip) obtains an English patent for a waterproofing solution made of equal parts shellac, caoutchouc, gum mastic, gum animi, and gum sandarac, "dissolved in spirits of wine or turpentine, or any other spirit, to the consistence of water."

1825. LEESON (H. B.) reads a paper before the Nottingham Literary & Scientific Society, detailing his method of manufacturing tubes and other similar articles of caoutchouc. This consisted in softening and distending the crude material to an uniform thickness, cutting from it strips, and wrapping the latter spirally around polished rods of the required diameter. After the strip was wrapped, it was covered and held down in its place either by a tape or by a metallic band, its entire length, and the rod thus covered was plunged into warm water, gradually brought to the boiling point. In a short time perfect adhesion of the india rubber edges took place, and the tubes thus formed were easily pulled off the polished rods.

1825. HANCOCK (Thomas) is granted 2 English patents under date March 15. One is for a new method of manufacturing artificial leather by employing a solution of india rubber instead of the liquid of the former patent, the other being for the employment of the liquid rubber as a coating for "ropes or cordage, and other articles from hemp, flax and other fibrous substances, with the view of rendering them waterproof."

1825. The first lot of india rubber shoes made of pure gum ever imported from Para was sold in Boston, Mass., by Thomas C. Wales. The shoes were of very peculiar shape, but Mr. Wales improved upon the style of subsequent shipments by sending American lasts to the Brazilian natives.

1826. LACY (Henry Charles) is the first to take an English patent, November 18, for carriage springs made of "cubical blocks of caoutchouc," having partition plates of iron between each series.

1826. In the second volume of "The Operative Mechanic," published in Philadelphia, will be found, at page 299, the first detailed account of heating rubber in molds.

1826. RATTIER and GUIBAL introduce, at their St. Denis factory, machinery for cutting threads of india rubber to be used in manufacturing elastic fabrics and subsequently are granted patents for the same, as well as for other improvements, in France and in England.

(To be continued)

ANTIRATTLER FOR WINDOWS. Strips of rubber of tapering cross-section are fitted between window sashes in such way as to be under compression when the window is fastened. This invention is adapted for use in either new or old windows for the effective prevention of draughts and rattling of sashes.

[1] Continued from INDIA RUBBER WORLD, September 1, 1934, p. 43.

EDITORIALS

45 Years Old

WE ARE pleased to call the attention of our readers to the passing of the forty-fifth milestone of INDIA RUBBER WORLD, commemorated in this edition. It is an event which stirs many pleasant reveries for those who have directed and faithfully served in guiding this journal in its long and successful course. Since its debut in October, 1889, they have chronicled the remarkable development of the rubber industry that is unequaled by any other, and rendered a service of incalculable benefit to the rubber world. In achieving this leadership they have been aided in counsel, observations, and information from the ablest specialists in rubber chemistry and technology.

For the generous support and appreciation of a host of subscribers and advertisers this journal is deeply grateful, and in requital for such encouragement pledges to make this publication in the years to come more interesting and more helpful than ever to every one in the rubber industry the world over.

Unfamiliar Business Facts

IN 1932, the latest year for which official figures have been issued, the federal government says there were "the equivalent of 34,131,000 fully employed" people working for a living in the United States. Of these, 25,453,000, or about 75%, were working for others for wages and salaries; while 8,677,000, or about 25%, were in business for themselves, as farmers, proprietors of business concerns, and professional people.

All these together, using all the capital that had been invested in all kinds of business, produced $39,365,000,000 worth of goods and services in 1932. Of this total income produced in the year, $31,533,000,000, or about 80%, was paid out to persons working for wages or salaries. This amounted to an average of about $1,240 per fully employed person for the year.

After the employes had been paid, only $7,832,000,000, or about 20%, was left over out of the year's production as a return for the labor and management of all people in business for themselves and to pay interest and dividends on all the capital invested in all business.

If no interest and dividends had been paid on any capital, this would have yielded about $900 for the year as the average return for labor and management for persons in business for themselves. What actually happened is that, after employes had been paid, all business concerns together used up $9,529,000,000 of their capital to pay proprietors for their labor and to pay interest on debt and dividends on the capital invested.

Persons in business for themselves drew out of the business as return for their labor and management an average of $1,025 each, or $215 less than the average amount paid employes working for a wage or salary. To do this they had to use up $3,708,000,000 of their capital.

All business concerns together used up $5,821,000,000 of their capital to pay $8,472,000,000 interest and dividends to investors. Of this amount paid out in interest and dividends, $6,925,000,000, or more than 80%, went to savings banks, life insurance companies, etc., and to individuals with incomes of less than $10,000. Only $1,547,000,000, or less than 20%, went to individuals with incomes of $10,000 and over. *National Industrial Conference Board.*

Defense of Independent Tire Dealer

IN REPLY to the statement of Leon Henderson, of the NRA, that the "small retail tire dealer is through," W. O'Neil, president of the General Tire & Rubber Co., Akron, O., defends the independent dealer as follows:

"The independent dealer is not through in the tire business. The gains which our company made in the first 6 months of this fiscal year, which were considerably above the average for the industry, should go definitely to prove that the independent dealer is not through as we have always been advocates of the independent dealer.

"The percentage of the tire business done by mail order houses in the past 5 years has been declining much faster than the decline for the whole industry, so it isn't going to be the mail order houses that will take the tire business.

"It's true that there has been an increase in the amount of tire business through factory-owned stores, but I think we will find that this is not an economical way to distribute.

"It is very true that there are entirely too many small tire dealers who buy less than $1,000 worth of business a year. This class of dealer ought to pass out.

"I haven't much fault to find with the price differentials allowed to smaller manufacturers. They haven't the advertised lines or the laboratory facilities, or the trained personnel in their dealer organization to render the service so necessary today to take care of their customers' needs properly. So, they're entitled to sell their merchandise at lower prices, for they can't live, charging the same prices."

What the Rubber Chemists Are Doing

Higher Alcohols in Rubber Compounding[1]

W. B. Wiegand[2]

THIS paper comprises an extended series of tests intended to define the broader properties of higher aliphatic alcohols, particularly from the point of view of carbon black compounding in tread-type mixings. The higher aliphatic alcohol used was Hegolit 3. This is stated to have a melting point of 50° C. and to consist of a mixture of primary higher aliphatic alcohol.

Noting observed limitations and having regard to the results with only 2 types of acceleration, the author concludes as follows:

(1) The higher alcohols are entirely without the cure activating action displayed by fatty acids. They do not dissolve and therefore make available the zinc oxide particularly essential in the case of mercapto-carbon black tread mixings. The higher alcohols are therefore under no circumstances to be regarded as a substitute for stearic acid. On the other hand they do not retard cure.

(2) There are some indications that the higher alcohols improve the dispersion of carbon black in rubber. In the case of laboratory mixings these differences were not of sufficient magnitude to show in the stress-strain curve.

(3) Their softening action is greater than that of stearic acid, but less than that, for example, of pine tar.

(4) Their softening action is not accompanied by cure retardation and by general degradation of physical properties, after cure, which characterize the free use of pine tar.

(5) The inclusion of up to 2% on the rubber of higher fatty alcohols *with proportionate reduction in pine tar* improves curing and physical properties, apparently without loss in consistency of raw stock.

(6) At their present high cost it seems questionable whether these improvements are economically advantageous.

[1] *Can. Chem. Met.*, Feb., 1934, pp. 24-29.
[2] Binney & Smith Co., 41 E. 42nd St., New York, N. Y.

Russell Effect of Rubber[1]

A. van Rossem and J. H. E. Hessels

THE remarkable phenomenon that many inorganic and organic substances produce a picture on the photographic plate, particularly after illumination, discovered by Moser in 1842, has been thoroughly studied by the English scientist, J. W. Russell, and it is usually called after him. Russell established by means of detailed experiments that the phenomenon does not come from a kind of radiation, for instance from a luminescence, but is caused by generated gas-like products which probably consist of hydrogen peroxide and act on the photographic plate. Before and after Russell the phenomenon was studied by many investigators, and the literature on the subject is unusually extensive. Russell already had recognized that rubber produces a picture after illumination as the following quotation shows:

"The action which strong light has in increasing the activity of many bodies is important. For instance it has been shown that pitch may be in contact with a photographic plate at 55° C. for 48 hours and no trace of action is visible, but if the pitch be exposed to sunlight for 2 or 3 hours it will then give a dark picture. The same action occurs with old printing, with pure india rubber, etc., and many bodies which under ordinary conditions are but slightly active become very active after exposure to bright light or simply to blue rays."

The results of the investigation by van Rossem and Hessels, undertaken to find whether the Russell effect permits the discovery of oxidation of rubber in the initial stage or a tendency to oxidation, both in crude and vulcanized rubber, were summarized as follows.

The Russell effect of crude rubber after illumination in air is governed by 3 conditions. 1. Chiefly in consequence of the smoke constituents, first latex sheet gives a strong Russell effect; hard fine Para shows no effect because a different kind of smoke is used in its preparation. 2. Most first latex crepes show a slight effect. More prolonged illumination after extraction makes the effect stronger, which is connected with the increasing tackiness of the rubber. 3. The acetone extract of crude rubber shows a strong Russell effect after illumination. In the rubber, however, this effect is hardly noticeable. Thus latex sprayed rubber, for instance, gives no Russell effect although the acetone extract of this rubber shows a strong effect. Heating tests of illuminated first latex sheet show that the gas-formed products, responsible for the Russell effect, are decomposed at 80° C. or possibly expelled. After treatment with ozone a Russell effect is also produced, but this gradually disappears between 50° to 70° C. The 2 gas-like products are therefore not identical. Various antioxidants for rubber have no influence on the Russell effect. Mastication is without marked influence; the same applies for mixing with sulphur alone. Mixes with the accelerators D.P.G., triphenylguanidine, hexamethylenetetramine, and sulphur very considerably weaken the Russell effect. Mercaptobenzothiazole alone produces a weakening that is very marked.

Vulcanized rubber, normal vulcanized, overcured, or even highly oxidized, shows only a very weak Russell effect. This phenomenon is therefore unsuited for identifying a tendency to oxidation (over-vulcanization) in vulcanized rubber, or as reagent for incipient oxidation.

Illumination tests with the quartz-mercury lamp are not suitable for the investigation of the Russell effect because the effect thus produced is the result of 2 influences: that is, illumination and the ozone generated. In weak concentration, under 0.01%, ozone causes a marked Russell effect in both crude and vulcanized rubber.

[1] "Communication on Oxidation of Rubber" from Government Rubber Institute, Delft.

A. C. S. Meetings

Rubber Division

THE eighty-eighth meeting of the American Chemical Society held at Cleveland, O., September 10-14, 1934, was exceedingly well attended, particularly the Rubber Division. About 450 rubber technologists were present. The division elected the following officers for the ensuing year: S. D. Cadwell, chairman; H. E. Simmons, vice chairman; C. W. Christensen, secretary-treasurer; L. W. Block, sergeant at arms; and Ira Williams, A. A. Somerville, H. C. Conroy, J. N. Street, and G. K. Hinshaw, executive committee.

Three sessions were held for the presentation of papers, all of which were abstracted in the September issue of this journal.

The Rubber Division annual banquet held at the Hotel Carter was fully attended. Guests of honor were executives of the American Chemical Society as follows: President Roger Adams, Secretary Charles L. Parsons, and H. E. Howe, editor, *Industrial and Engineering Chemistry*. Zest was added to the occasion by a fine musical entertainment, unique table favors, and the distribution by lot of many valuable and useful articles as prizes contributed by leading suppliers of materials used by rubber goods manufacturers.

During the convention the rubber plants in Akron were open to visiting chemists. This highly important privilege was much appreciated by the large number of rubber men who availed themselves freely of the opportunity to inspect operations in the leading rubber factories.

Chicago Group

THE fall dinner-meeting of the Chicago Group, Rubber Division, A.C.S., is scheduled for October 5, at 6 p.m., in the College Inn of the Hotel Sherman, Chicago, Ill. Two papers of exceptional interest and importance will be presented. The first, by J. B. Crockett, president of the Heveatex Corp., Melrose, Mass., on "Rubber in Powder Form," was prepared by Royce J. Noble, of the same company. J. P. Stanton, affiliated with the Dearborn plant of the Ford Motor Co., will present the second paper, "The Use of Rubber in the Ford V-8."

Members and all others who wish to attend the meeting are invited to apply for reservations to Otto Urech, care of Samuel Bingham's Sons Co., 636 So. Sherman St., Chicago, Ill., or to B. W. Lewis, care of Wishnick-Tumpeer, Inc., 365 E. Illinois St., Chicago, Ill.

New York Group

THE fall meeting of the New York Group, Rubber Division, A.C.S., will be held October 19, 1934, at the clubrooms of the Building Trade Employers Association, 2 Park Avenue, New York, N. Y. A program of unusual interest will be presented, including a lecture by W. B. Wiegand, who recently returned from a world tour, visiting rubber plantations and rubber goods plants of the Orient and Europe.

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Iron in Rubber

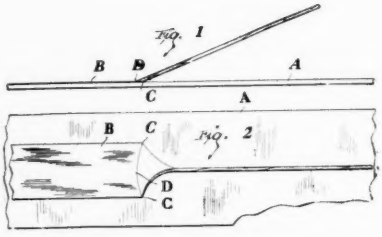
THE possible harmfulness of the presence of iron in rubber has been closely investigated by French authorities[1] who found that the amount of iron naturally contained in crude rubber and coagulated latex varies from 0.002 to 0.006%. The proportions normally derived from iron mill rolls in mastication are from 0.01 to 0.02%, of which 80% is in the dispersed state and 20% in organic combination.

Vulcanization was found beneficial in that "it transforms to the state of the less active sulphide harmful compounds of iron which the rubber may contain." The authors' conclusions agree with practical experience that "it is advisable to avoid this metal even in the form of derivatives as little reactive as colcothar or Venetian red." Notwithstanding the latter recommendation, red oxide of iron free from soluble salts is utilized as a pigment in rubber compounding practice with satisfactory aging results in such stocks as packing, tiling, heels, etc.

[1] "The Pro-oxygenic Role of Iron in the Oxidizability of Rubber." Dufraisse and Vieillefosse, *Chem. Tech.*, 7, 213 (1934). (Translation.)

New Machines and Appliances

INTERESTING AND TIMELY PATENTS



Figs. 1 and 2. Thread Making Apparatus

A RUBBER thread of round cross section is produced by twisting a flat film of rubber in tacky state.[1] The method employed is indicated in Figures 1 and 2 which are respectively a side elevation and a plan of means providing a surface on which a film of latex has been applied, the latex film being shown withdrawn at an angle to the surface in the direction of the edges of the film and twisted.

A designates the surface which may be a web, disk, etc., arranged to travel respecting an applicator (not shown) where the film of rubber *B* of determinate width is applied. The film is withdrawn from the surface at the points *C, C* and twisted. Twisting forms the film into a thread of round cross section with helical convolutions. The edges of the film adhere at *C, C* more strongly than the central portion *D, D* which pulls away from the surface more easily. This condition facilitates formation of the film into round thread of uniform cross section.

The thread may be made in various sizes from extremely fine up to quite coarse, depending upon the width and thickness of the film formed. It may be subsequently covered with cotton, silk, or other thread, and in either its covered or uncovered state may be woven, knitted, sewed, wound, or otherwise worked into many different fabrics, golf ball centers, and other articles.

In carrying out the method, the film of rubber applied lengthwise to the surface *A* will have a lengthwise grain which in the thread becomes a helical grain and produces a thread of much higher tensile strength than heretofore produced.

Footwear Conveyer

Footwear assembling conveyers have superseded the former hand construction method of rubber shoe construction. An end view of an improved conveyer for this purpose is illustrated in Figure 3, an important feature of its arrangement being that shoe construction can begin at one end of the conveyer and the finished goods removed at the other end.

In the construction shown[2] twin conveyers are supported on a series of standards *A*, each of which carries at its top transverse arms *B*, supporting upper and lower U-shaped yokes *C*. Secured to the outer branches of the yokes are square rails, *D, E, F,* and *G*. At each end the upper rails *D* are connected by semi-circular rail elements with the lower rails *E*, and in similar manner the upper rails *F* are connected with the lower rails *G*. This construction furnishes inner and outer tracks each of which is continuous and has an upper and a lower run for carriages *H* designed to move on the rails drawn by chain and sprocket connection *I* to a motor which is not shown in the illustration.

Each carriage has a rotatable last support *J* carrying a semi-circular segment *K* mounted for rotation in *J* at pivot points *L*. The last support proper *M* is mounted to rotate in *K*. The last is held in position by pins *N*.

In operation the carriages *H* are moved along beneath the table *O* and the lasts carried by the last supports on the upper run of the conveyer are presented in turn to the operators stationed along the conveyer. These operators successively assemble the parts of a rubber footwear article on each last. The final operator in the line removes the last and article for subsequent treatment.

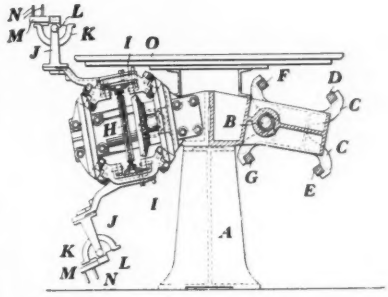


Fig. 3. Footwear Assembling Conveyer

Small Hose Vulcanizer

A development[3] of much interest to manufacturers of small hose is that for the continuous vulcanization of such hose to facilitate volume production and secure the important incidental advantage of low cost. Referring to the illustration in Figure 4, the vulcanizing chamber *A* is an elongated jacketed cylinder having a smooth central bore through which the hose *B* is passed. Heat is applied to the jacket through pipes *C, C*.

Extending also through the bore of the vulcanizing chamber and surrounding the hose is a thin metallic ribbon *D* of a width sufficient to entirely surround the hose as a lining squeezed firmly between the outer surface of the hose and the interior surface of the vulcanizing chamber. Reels *E* and *F* at opposite ends of the apparatus are driven so that the ribbon moves in either direction through the vulcanizing chamber. These reels are connected by shafting and bevel gearing to a reversing power mechanism *G*.

The propulsion of the work is performed by the ribbon drive mechanism rather than by any power applied to the work holding reels *H* and *I*. The ribbon with the work enclosed within it constitutes a solid rod or piston-like element which as it passes through stuffing boxes prevents

[1] U. S. patent No. 1,943,381, Jan. 16, 1934.
[2] U. S. patent No. 1,953,256, Apr. 3, 1934.
[3] U. S. patent No. 1,949,226, Feb. 27, 1934.

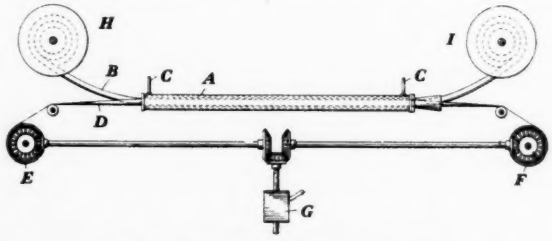


Fig. 4. Continuous Hose Vulcanizer

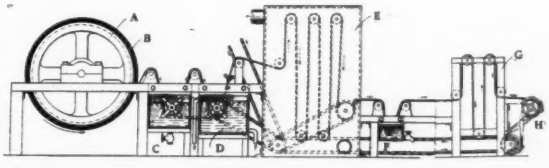


Fig. 5. Machine for Strip Cutting and Coating Blade Stock

escape of steam from the vulcanizing chamber.

Windshield Wiper Blades

In manufacturing windshield wiper blades of the multi-strip type, the vulcanized rubber strips to be assembled in side to side relation should possess sufficient tackiness to adhere firmly in order to permit their being clamped together in the wiper without becoming misalined.

The exceedingly thin layer of adhesive is deposited on the vulcanized rubber sheet stock from a very dilute dispersion or solution of the latter in a volatile liquid. The apparatus shown in Figure 5 is employed for strip cutting and coating the blade stock.[4]

A long length sheet of vulcanized rubber of the desired thickness is wound upon a drum *A*, and is then cut into strips *B* of the desired width. Each strip is then fed from the drum through a cleaning bath *C*, of an alkaline solution, to remove dust, grease, sulphur bloom, and other foreign substances, and then through a rinsing bath *D* of water, suitably driven pulleys, as shown, being provided to effect the feeding.

The strip is then fed through a drier *E* and in its cleaned and dried condition is passed through a coating bath *F* of a dilute adhesive solution. After being coated, the strip is fed through a festoon rack *G* to permit evaporation of the solvent, and the strip with its very thin coating of adhesive is temporarily wound into one of the several rolls of the reeling device *H*. The apparatus permits a continuous procedure and facilitates the treatment of many strips at the same time.

From the rolls the coated strips may be conveniently fed and cut into the desired short lengths for assembly into the multi-strip wiper blades.

Flat Molded Fire Hose

Rubber-lined, cotton-jacket fire hose is reeled or stored in folded condition. This produces seriously damaging strains on the edges of the flattened rubber lining which ultimately cause it to fail in service. To obviate this damage and so improve the life of the hose, an apparatus has been devised[5] by which the hose can be held under tension during vulcanization in desired flattened form for reeling without tension of the rubber lining.

The vulcanizing apparatus comprises, Figure 6, a set of standards, *a* on which are mounted a number of parallel channel irons *b*. Between their parallel walls are narrow spaces to accommodate lengths of rubber-lined hose *c* in flattened condition. The channel irons are provided with molding faces *d* of sheet metal insulated from the channels by layers of heat insulating material.

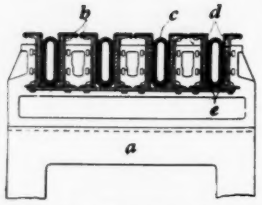


Fig. 6. End Elevation Fire Hose Apparatus

In Figure 7, the table is shown inclined to the horizontal for drainage of the hose during and after vulcanization. For a distance from the lower end of the set of channel irons the spaces between them are provided with metal extension plates of channel form for supporting and restraining the hose in its region of greatest movement in being stretched.

In operation, the lengths of hose are placed in flattened condition in the spaces between the channel irons and in the U-shaped lining plates and their upper ends are anchored and sealed by plugs and rings.

The lower ends of the hose are then anchored in a similar manner and the carriage is positioned by a hand-crank.

The hose lengths are then held under constant tension by the pressure cylinder during vulcanization, which is effected by circulating a heating fluid, preferably steam, through the hose. Water of condensation is passed out at the lower ends of the hose lengths, and after vulcanization they are uncoupled at their ends and removed from the apparatus.

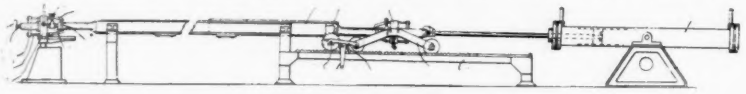


Fig. 7. Side Elevation Fire Hose Apparatus

Machine for Backing Sheet Rubber

The machine indicated in the sketch in Figure 8 is designed for rolling sheet rubber up in holland to keep it from exposure to the air and preserve its fresh tacky surface until the stock is used. The machine[6] comprises 2 parts mounted on a truck for portability. That part on the rear of the truck consists of a cylinder *A* coupled by the hose *B* with a source of compressed air. The piston of the cylinder is connected by levers to the framework *C* carrying the rolling-up mechanism which can thus be adjustably inclined into driving contact with the mill roll at *D*. The holland supply passes upward from roll *E* and contacts the sheet rubber as it is delivered by the mill. Holland and rubber are wound up together on roll *F* ready for use.

When the holland supply roll is used up pressure is released from the cylinder allowing the apparatus to back away from the mill and permit a new supply of holland to be set in place for continued operation of the machine.

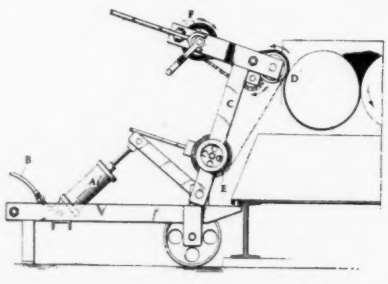


Fig. 8. Backing Rubber with Holland

Golf Ball Covers

The damaging blows to which the covers of golf balls are unavoidably subjected in service are well resisted by a new type of cover, the application and vulcanization of which causes no injurious effects on the tension wound ball or manufacturing losses by imperfect goods or waste of cover material.

The improved method[7] comprises the incorporation in balata golf ball cover stock of material which will not bring about vulcanization during the usual cover making and molding operations but which is capable of reacting with a later supplied component to make a powerfully vulcanizing combination. Such a mixing is the following:

Ingredients	Parts
Mechanically cleaned balata	15
Fine Para rubber	4.5
Zinc sulphide	1.12
Zinc oxide	.75
Sulphur	.16
Dibenzylamine	.18

This mixing contains no high powered vulcanizing combination, therefore it may be milled without any special precautions to prevent scorching on the mill. Also it may be made up in large batches and stored until needed without fear of vulcanization during storage. After milling the stock may be cut into pieces whose volume is approximately ½ of the volume between the ball and the cover mold, and molded into hollow hemispheres for application to the ball. They may be made up in any desired quantity and kept until needed. When applied each ball is molded for not exceeding 5 minutes at a temperature sufficient to unite the half covers to each other and to the ball and to form the cover markings, but not to exceed about 230° F.

The balls are cooled by allowing tap water to flow through the jackets of the mold and next may be removed to a refrigerator regulated to cool the balls to about 40° F. The molding, cooling, and chilling with results close to maximum efficiency are obtained by regulating the time of this cycle of operations to occur in a period less than ½ hour.

The vulcanizing operation is accomplished by subjecting the stock to the action of material which will diffuse

[4] U. S. patent No. 1,958,092, May 8, 1934.
[5] U. S. patent No. 1,939,871, Dec. 19, 1933.
[6] U. S. patent No. 1,957,518, May 8, 1934.
[7] U. S. patent No. 1,951,392, Mar. 20, 1934.

into it and together with the zinc oxide, amine, and sulphur form a powerful vulcanizing combination. With the stock above specified, carbon disulphide may be diffused into the cover of the ball, and reacts with the dibenzylamine to form a powerful accelerator, after which the cover may then be vulcanized at temperatures and for times insufficient to injure the rubber thread winding of the ball. Other suitable amines may be used, and also other suitable diffusible complementary vulcanizing ingredients, such as well known accelerators which react with amines to form more powerful accelerators.

Tire Valve Stem

A NEW development in tire valve stems provides several important advantages. As pictured in the illustration, the base is rubber semi-vulcanized directly on the metal stem,

Dill Rubber Base Valve Stem

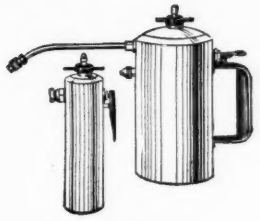
which in turn is vulcanized into the inner tube at the time the tube is made. The result is complete elimination of all possibilities of leaks at the valve stem base. Thus all the advantages of durability, rigidity, and appearance of the metal stem are retained; while all disadvantages of application to the tube are removed. The Dill Mfg. Co., Cleveland, O.

Electric Tire Brand

A HAND electric burning brand operating from a 110-volt light socket is most useful for applying serial numbers to tires or marking "seconds;" to record mileage, date codes, and identify the goods indelibly. The numerals are made ½-, 1-, or 1¼-inch with room on the face of the brand for 2 interchangeable characters. Any combination of numerals can be quickly branded. Burning Brand Co., 1400-16 W. Fulton St., Chicago, Ill.

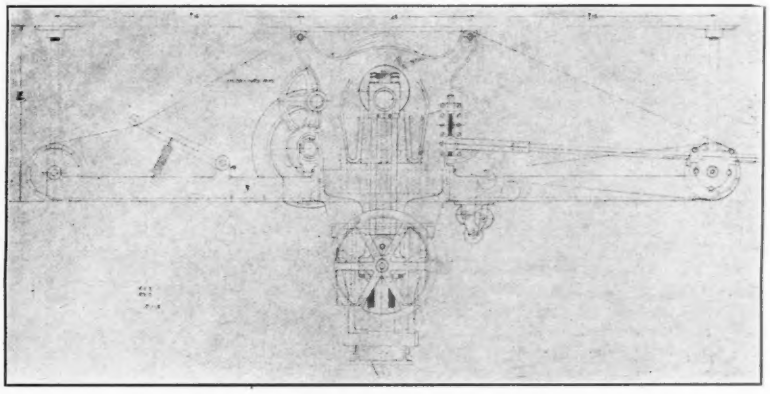
Portable Sprayer

WHILE the portable spray appliance pictured was designed with respect to its use as garage equipment for cleaning automobiles, it is a very handy appliance for similar work and spray painting in rubber plants. It is com-



Port-A-Spray

pletely portable, heavily built of extra-heavy cold rolled steel, riveted and soldered throughout, built to withstand 500 pounds' pressure. Other features are interchangeable nozzles, positive pistol trigger control, and specially designed strainers easily removed for cleaning, and oilproof valves. Earl N. Webber Co., Daily News Bldg., Chicago, Ill.



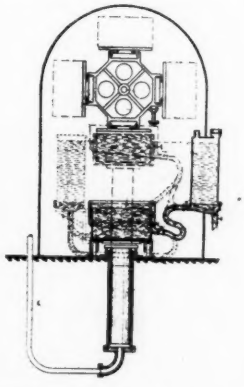
Sheridan Sheet Rubber Cutting Machine

Sheet Rubber Cutting Press

THE numerous sheet rubber shapes required in making rubber shoes and many other rubber products were formerly cut singly by hand. The advantage of the machine shown in the accompanying drawing is that it supplants cutting such parts by hand operated dies and cuts them in multiple by the use of a steel rule die attached to the head or moving platen of the press. The sketch indicates the press in side elevation flanked on either side by the belt feed and delivery arrangements.

The material is fed from a reel or direct from the calender on to specially treated fiber boards and conveyed by means of a belt conveyer moving intermittently, timed with the operation of the press. The scrap surrounding the cut pieces on the fiber board is stripped away by the group of 3 small rollers mounted on the left or delivery side of the machine, whence it is batched and returned either to the calender or a storage bin.

The cut pieces adhering on the fiber boards are removed to the making room without further handling. This plan saves picking the cut pieces off and placing them between specially prepared cloths for further operations. There is also the very important advantage of the added output due to multiple cutting. T. W. & C. B. Sheridan Co., 183 Essex St., Boston, Mass.



German Dipping Apparatus

Improved Dipping Machine

THE new type of dipping apparatus shown in the illustration is of German origin. Its operation follows. After the form holders have been filled, the empty dipping trough is wheeled into the machine and connected by a tube to the solution container, from which the solution flows into the tank through an annular channel until the level of the solution can be observed through a gage glass at the lower end of the container. When the solution level is above the overflow edge of the trough the opening from the container is closed, and the dipping trough is raised to a fixed level; the forms are dipped, and the excess solution thus displaced flows back through the channel into the container. Thus the level of the solution is always maintained up to the overflow edge.

This innovation maintains the solution at a constant level, always permitting the trough to be raised to the same height and at the same time insuring that all molds are evenly dipped. Martin & Huneke, Berlin, Germany.

Tire Marker

COLORED crayons of oval cross-section are used for striping lines on the sidewalls of new tires or those that have become shopworn. The crayon being shaped exactly like a piece of tailor's chalk makes it very easy to stripe a tire by placing it on a spinning table and holding the crayon in the molded groove on the sidewall.

Mats from Old Tires

A NOVEL mat made from discarded old pneumatic tires has opened a promising new field for the utilization of a waste product. It is claimed that with simple hand power machines to be leased of the inventor any one can make these mats.

The tools consist of a rotary cutter for reducing the scrap tire to strips and an interchangeable double punch for measuring and punching the strips at regular intervals and for making the necessary spacing washers. The material thus prepared is easily assembled in mat form on galvanized wire as a support. L. F. Schuhmacher, 621 So. Fern St., Wichita, Kan.

Long-Distance Telemeter

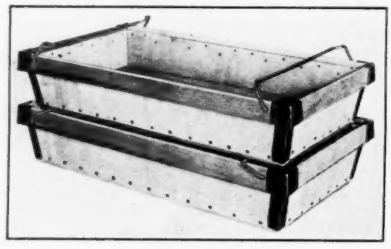
A NOVEL long-distance transmitter and recorder is here illustrated. It is adapted to a system by which records of temperature, pressure, liquid level, or motion may be transmitted great distances, 250 miles or more, with extreme accuracy and with freedom from circuit disturbances.

Messages of circuit made and circuit broken are translated by the recording receiver into upward or downward movement of a pen positioning mechanism, thereby periodically carrying the pen arm to its new position as measured by the transmitter. This system requires a source of alternating current at both receiver and transmitter, but they need not be synchronized, or of the same frequency. The recording receiver uses a 12-inch chart and is housed in the new moistureproof rectangular case. The Bristol Co., Waterbury, Conn.

Bristol Long-Distance Recorder

Woodsteel Tote Boxes

NESTABLE tote boxes of the sort here pictured are a source of great convenience and economy in any plant where small articles and supplies require to be trucked from place to place. In a rubber plant, for example, the wood-steel construction is very suitable for handling the molding stock and small cured articles of the press, trimming and packing, and stock rooms. These nesting boxes are at once strong, light, clean, simple, efficient and easy to handle. Chicago Mill & Lumber Co., 111 W. Washington St., Chicago, Ill.



Woodsteel Nesting Tote Boxes

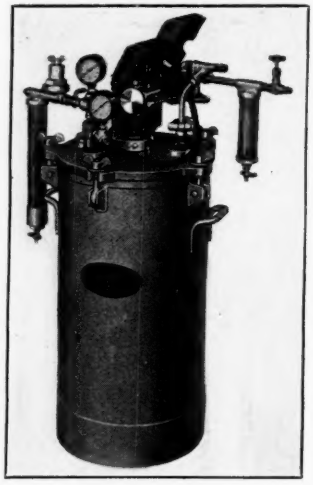
Hanks Electric Rubber Knife

Electric Offset Knife

PROGRESS in hand cutting of sheet rubber for shoe parts has been made by substituting an electric offset knife for the usual hand knife with a sharp edge. The new knife, as pictured, consists of an electric heating head into which a blade is screwed against a tapering contact surface which conducts heat to the blade. A suitable clamp serves for attachment of the handle at the side and an outlet for a cord at the top. The angles of the device are such that the view of the operator is not obstructed while cutting. The position of the handle is close to the blade for ease of operation. The plug-in receptacle should be located above and in front of the operator, with a cord of sufficient length to swing the pattern and not drape on the bench.

Summarizing the advantages of this tool: the heated blade cuts clean with very little pressure; a sharp edge is not necessary; the pattern is easily followed; the grip is close to the blade; and the tool, being well balanced, does not tire the operative's arm. Experience is not necessary to do good work. New blades, easily replaced in the heating head, are supplied in bronze and steel.

Cutting is done with this knife on a heavy glass surface set at a convenient angle, instead of a zinc surface as in the case of the usual hand cutting of rubber. R. S. Hanks, 67 Bruce Rd., Waltham, Mass.



Spraco Powder Sprayer

Powder Spraying Unit

EXTRUDED tubing requires internal dusting with talc or soapstone as rapidly as formed to prevent adhesion and as lubrication for poling and stripping after vulcanization. The powder spraying unit illustrated was developed for this purpose. It supplies a closely adjustable continuous and uniform flow of lubricating powder into the extruding tube from the delivery nozzle in the mandrel of the tubing machine.

This equipment comprises a seamless drawn steel pressure container 14 inches in diameter by 27½ inches high with aluminum clamp cover, rubber composition gasket, and bronze filler plug. The control head includes reducing valve and gages to show the air pressure in the container. The adjustable delivery nozzle can be clamped to hold any desired delivery.

Mounted on the head is an air driven motor operating a paddle to agitate the stock of powder in the tank. This requires not less than 30 pounds' per square inch pressure. Two oil and water extractor and air filters are utilized to protect the air motor and the air control parts and to prevent clogging. One of the pressure gages indicates pressure within the tank; the other is solely to indicate stoppages in the air and powder lines. Spraco, Inc., 114 Central St., Somerville, Mass.

New Goods and Specialties

Echo Golf Ball

Liquid-Center Golf Ball

TO THE golfing fraternity now is offered a high-compression, liquid-center golf ball at a very moderate price. Extremely hard wound, it is said to give maximum distance and to have that much-desired "click" found only in golf balls of the better grade. Bon-Dee Golf Ball Co., 1353 Beard Ave., Detroit, Mich.

Pneumatic Tire Patch

A NEW nail hole patch for pneumatic tires has been developed by The B. F. Goodrich Co., Akron, O. This new patch, taking the place of the old-fashioned tire plug, automatically seals up nail holes, keeps out dirt after it is applied, prevents ply separation, and protects the inner tube. It will not throw tires out of balance and cause shimmy, an especially important feature with the modern high-speed automobiles.

Constructed with a semi-cured face, with a substantial plug of self-vulcanizing rubber to be placed over the injury, the new patch is easy to apply. Pressure from the tube and flexing action of the tire in service cause the self-vulcanizing rubber to flow into the injury and seal it completely. This construction prevents dirt and grit from entering the nail hole and causing separation and chafing of the tire.

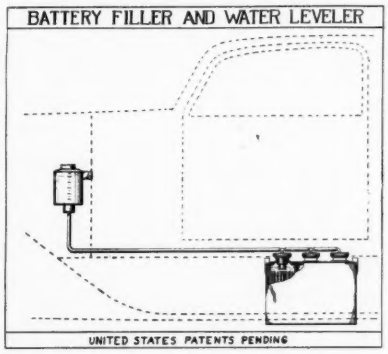
"Elastic Woundplaster"

FROM abroad come details of a new plaster for use on infections, etc., especially where the secretions have a tendency to spread with damaging results. This "elastic woundplaster," as it is called, consists of ordinary adhesive or healing plaster cut out to form a window or opening covered by a very thin and yielding translucent rubber film impermeable to pus. The adhesive is placed on the "well" skin, and the rubber film over the inflammation, which, if it swells further, is held from spreading by the yielding rubber film.

Two types of this protective plaster are named. In one the internal annular portion carries efficient healing agents; while the other lacks this feature, the prescribed medicament being placed on the sore spot by other means. The size and the shape of the plaster may be varied according to requirements. Friedrich Schwank, Auhofstrasse 141, Vienna, XIII/1, Diabelligasse 1a, Austria.

Rubber Battery Filler

A RECENT invention, shown in the illustration, is an all-rubber device to fill storage batteries. Its purpose is to provide a ready, automatic means of water supply to the battery by controlling the water level and maintaining it at a constant level.



This device consists of a rubber reservoir connected by conduits to each battery in connection with a float valve, which will maintain the correct water level in the battery cells. As these conduits are connected with the cells through caps and the float valve, they shut off the flow of water when the proper level is reached. The only care necessary is to keep the storage reservoir filled; this condition is helped by placing the reservoir in a position readily visible.

The invention is said to be particularly valuable during the summer when water in a battery, especially an automotive vehicle battery, rapidly evaporates. John H. Doak, P. O. Box 4205, Portland, Ore.

Nipples That Screw On

THAT there actually is room for improvement in a product seemingly so thoroughly standardized as a nursing nipple is strikingly indicated by reactions received by the Davidson Rubber Co., Boston, Mass., on its new nipple that screws on a nursing bottle. Although the company for several decades has manufactured No-Colic nipples, General Manager Edward J. Casey for some time believed that an improved product embodying easier handling, longer life, and more secure attachment to the bottle, would find a degree of acceptance, by consumers and the trade, that would amply justify its introduction to the present competitive market; so the new Davidson No-Colic Screw-On Nipple was invented.

Its basic feature, covered by patents, is the heavy, firm, rubber base molded with and an integral part of the nipple proper. This base carries internal screw threads, by which the nipple is screwed to the bottle, the neck of which is also threaded. This new construction offers several important advantages over the ordinary type: the nipple can be easily and quickly put on the bottle, even in the dark without the usual slipping, and fumbling hands need never come into contact with either the inside of the nipple proper or the neck of the bottle (an important sanitary feature); the base prevents collapse of the nipple; the baby cannot get the nipple off the bottle; and cracking and splitting of the rubber, due to excessive stretching, are eliminated.

This new nipple naturally necessitated a nursing bottle to which it could be screwed; ordinary nursers being, of course, entirely unsuitable. Arrangements were made with one of the largest manufacturers of prescription ware and nursing bottles, for the production of an 8-ounce nurser (also covered by patents held by Davidson), which is now being distributed.

An attractively colored display card has been devised to promote the sale of these vastly improved products. Featured on the display are a giant-size reproduction of the nipple and bottle neck; 4 standard packages, each containing 3 nipples; an actual nurser with a nipple; and the invitation, "Pick it up—see how easy it works."

No-Colic Screw-On Nipple Display

Rubber Industry in America

OHIO

Manufacturing activity in the rubber industry showed no marked improvement over that of August. Tire production in the Akron section is on the basis of light shifts 4 days per week, or somewhat under ½-capacity. Mechanicals are fairly active. Footwear experienced a poor season for tennis, but is now fairly busy on goods for winter wear. Insulated wire production is being retarded by lack of demand from the building, public utility, and transportation trades and other large users of electric wire and cables. Automobile topping production is down, together with all automobile accessory rubber goods.

The vast stock of government owned hides acquired because of the drought has served to depress the leather market. This condition has brought leather soles into sharp competition with those of rubber, seriously to limit production of the latter.

Production limitations in all rubber goods are reflected in the slackness felt in all lines of rubber chemicals and other compounding materials.

The Goodyear Tire & Rubber Co., Akron, recently appointed A. B. Matthews manager of its employment division, succeeding Noble Miller, assigned to other duties. Mr. Matthews was formerly personnel manager at Goodyear's Cedartown Mills, Cedartown, Ga. Hearings of Goodyear's defense on charges of the federal trade commission that its tire contracts with Sears, Roebuck & Co. are violations of anti-trust laws were resumed in Chicago, Ill., on September 11, almost one year from the date charges were filed by the government. Ben Gerpheide has been transferred to other than safety work at Goodyear; consequently he has been compelled to resign from the Rubber Section, National Safety Council, where he had been vice president in charge of program.

Construction work on a $12,000 chemical storage building at Goodyear's Plant 2 was started September 20. The structure will be one story high, 80 by 160 feet, and of brick and steel.

Goodyear reports that J. J. Biandin, manager of the crude rubber department, was recently in Panama investigating the possibility of rubber planting in that district.

Motor & Equipment Wholesalers Association will hold its annual convention in Cleveland, November 16 and 17.

Reliable Rubber Co., Bellevue Rd., Toledo, recently chartered in Columbus, will make automobile accessories including rubber mats, rubber for windshield wipers, washers, etc.

Goodrich Notes

Several changes in the battery line of The B. F. Goodrich Co., Akron, were announced by W. C. Roberts, battery sales manager. The former 13-21 Heavy Duty Electro-Pak has been replaced with the 153-21 H C Electro-Pak, a multiple unit type carrying 15 plates in a 13-plate cell, resulting in higher capacity than the old Heavy Duty. Likewise, the 15-21 Heavy Duty Electro-Pak has been superseded by the 175-21 H C Electro-Pak, bringing higher capacity through use of 17 plates in a 15-plate cell. The Goodrich battery line has also been further augmented by the 13-12 Regular and the 153-18 and 175-18 in reversed assembly for certain types of cars.

Philip J. Kelly, advertising director, September 1 resigned from Goodrich to join Meldrum & Fewsmith, Cleveland advertising agency.

Ben W. Lewis, secretary of the Chicago Group, Rubber Division, A. C. S., recently visited the Goodrich plant.

Charles Fleming, who joined the Miller Rubber Co. 23 years ago and spent many years as a maintenance engineer, retired from service. He was given a dinner by his department associates on September 20.

Officers of the Foremen's Club of Goodrich's mechanical division were elected at the annual meeting September 19. Clarence Weckman was named president, Russell Grabiel, vice president; C. Ream, secretary; Patrick Fanning, financial secretary; Frank Tanner, secretary. Committee chairmen selected include Jack Mann, recreation; William Hecker, wage; James Sullivan, educational; Harold Fryberger, individual problems; and Paul Tenney, safety.

The tire division's Foremen's Club held its annual election September 23, following a dinner.

Since Goodrich's Silver Fleet was formed, it has traveled nearly 8,000,000 miles in testing tires, announced S. B. Robertson, vice president in charge of the Goodrich tire division. The original Silver Fleet was formed in January, 1929, when 14 cars and one truck left New York on a nation-wide tour. This ended on November 1, 1929, when the fleet returned to New York after having traveled 451,680 tire miles.

RSL Resin

RSL Resin was developed for use in hard rubber for steering wheels to eliminate any smudging due to the presence of carbon black in the stock. The addition of a few percentages of this resin will prevent this condition and produce a perfectly clean product.

Victor Rubber Corp., Springfield, through Receiver L. C. Sturgis has announced that bids offered at its public sale September 10 and 11 were all ordered rejected by the Court, which then instructed Mr. Sturgis to dispose of all the rubber company's equipment at private sale.

A. Schulman, Inc., dealer in scrap rubber, hard rubber dust, and crude rubber, maintains a main office at 608 Akron Savings & Loan Bldg., Akron, a branch at 576 No. 20th St., East St. Louis, Ill., and warehouses in both cities.

Frank A. Seiberling, president of the Seiberling Rubber Co., Akron, will celebrate his seventy-fifth birthday on October 6. A banquet attended by important business and civic leaders will be given in honor of the "Little Napoleon" of the rubber industry.

Harvey S. Firestone, Sr., chairman of the board, Firestone Tire & Rubber Co., Akron, recently held his annual "potato field day" at the place of his birth in Columbiana County, which hundreds attended.

Mexican Rubber Industry

Mexico has about 16 or 18 manufacturers who specialize in rubber products, 4 of which produce automobile tires and are relatively large in size. Other products than tires and inner tubes being manufactured at the present time are rubber shoes, rubber heels, water bottles, raincoats, floor coverings, automobile accessories, erasers, bicycle tires, carriage tires, airbrake hose, garden hose, and transmission belting.

The smallest tire manufacturer has a daily output of from 10 to 20 pneumatic automobile casings; while the largest produces from 125 to 130 casings per day. The ability of the local industry to care for the tire requirements of the country is indicated in the official Mexican import statistics. Mexican imports of pneumatic tires totaled 1,125,354 kilos in 1932; 687,612 kilos in 1933; and only 185,017 kilos in the first 5 months of 1934.

Imports of crude rubber by Mexico amounted to 2,006,733 kilos in 1933, compared with 871,095 kilos in 1932 and with 1,358,125 kilos during the first 5 months of 1934. Rubber manufacturers estimate that total imports of crude rubber by Mexico in 1934 probably will amount to 2,250,000 or 2,500,000 kilos, indicating the growing importance of the Mexican rubber manufacturing industry. (*Assistant Commercial Attache Robert G. Glover, Mexico.*

EASTERN AND SOUTHERN

According to a report to the Allegheny regional advisory board, general business, as measured by estimated freight car requirements, will be 4.6% better in the fourth quarter of this year than in the same quarter of 1933. The rubber industry, however, expects only a moderate upturn this fall.

Reorders for rubber raincapes continued an outstanding feature of current buying in the notion market last month.

The Chemical & Pigment Co., Inc, 500 Penn Ave., Scranton, Pa., manufactures for the rubber trade lithopone, cadmium red and yellow, Titanolith, Astrolith, and Sunolith.

United States Rubber Products, Inc., 1790 Broadway, New York, N. Y. through H. A. Everlien, sales manager, Mechanical Goods Division, announced the appointment of H. S. McPherson as manager of mechanical sales in the St. Louis district. Mr. McPherson, with the company over 15 years, was formerly in charge of mechanical sales in the Boston district and prior to that held important posts in the export department in Australia, South America, and the Far East. W. G. Mueller, for more than 25 years a salesman with the company, largely in the Connecticut territory, has been made manager of mechanical sales of the Boston branch.

Poole Foundry & Machine Co., Woodberry, Baltimore, Md., now is sole owner of all domestic and foreign patents relating to the Poole (all metal-gear lubricated) flexible shaft coupling.

Freeport Sulphur Co., Grandesport, La., recently erected a huge crane, with a reclaiming capacity of 400 long tons per hour, at its shipping terminal.

New York Automobile Show of 1935 will be held at the Grand Central Palace, New York, N. Y., January 5 to 12, under the auspices of the Automobile Merchants' Association of New York. There will be no hotel or private shows.

The Barrett Co., 40 Rector St., New York, N. Y., has appointed as manager of its Atlanta sales office J. C. Carroll, formerly with the Virginia-Carolina Chemical Corp., Richmond, Va.

Glyco Products Co., Inc., Bush Terminal, Brooklyn, N. Y., has named Technical Adviser Edward Rosendahl vice president and general manager.

Southern Alkali Corp., jointly owned by the Pittsburgh Plate Glass Co., Pittsburgh, Pa., and the American Cyanamid & Chemical Corp., 30 Rockefeller Plaza, New York, on September 14 began operations at its new plant at Corpus Christi, Tex. The new company, which produces caustic soda and other chemicals, is the pioneer producer of alkali in the Far South.

Vulcanized Rubber Co., Morrisville, Pa., reports that business has increased in some departments, but declined a little in others.

Underwood & Underwood

L. D. Tompkins

U. S. Rubber Executive

One of the outstanding officials of the United States Rubber Co., 1790 Broadway, New York, N. Y., is Lucius Douglas Tompkins, a vice president, general manager of the tire division, a director, and a member of the executive committee. He has also served as vice president of United States Rubber Plantations, Inc., president of the General Rubber Co., director of the Gillette Rubber Co., and as an officer of many other subsidiaries of U. S. Rubber. In 1928 Mr. Tompkins was chosen special representative of the parent organization's president as a member of the Rubber Institute. His capabilities, moreover, have been readily recognized outside the company. He served as an industrial adviser and as special assistant administrator of NRA several months.

Mr. Tompkins' birthplace is Harlingen, N. J.; his birthday, May 13, 1889. He attended local grammar and Trenton High schools, Rutgers College, and Yale University, graduating from Yale in 1913 a bachelor of arts.

His name appears on the rosters of Delta Phi, Theta Nu Epsilon, and Yale, New York Athletic, and Cherry Valley clubs.

Rubber Code News

The National Recovery Administration recently announced the formation of another industrial division in its organization set up. Capt. Joseph F. Battley, heretofore deputy administrator, will have charge of the new division as acting division administrator. It will embrace the codes comprising chemicals, drugs, paints, paper, and rubber in all of their various processings and forms of manufacture.

The rubber section, headed by a deputy administrator, has under its jurisdiction 12 codes covering those products whose basic material is rubber. These codes are divided into 3 groups, each under the supervision of an assistant to the deputy. The first group of 10 codes covers the rubber manufacturing industry with its 9 manufacturing divisions and the reclaimed rubber manufacturing industry. The second group covers the tire manufacturing industry; and the third group covers the retail tire and battery trade. The wholesale trade will be covered by a code supplementary to the retail tire and battery trade. This code is now in formulation.

Providence Tire and Battery Dealers

The Providence Retail Tire & Battery Dealers Association has been appointed by the National Retail Rubber Tire & Battery Dealers Code Authority to serve as a filing agency for the records of prices required by the code. Paul R. Ladd, secretary, has been named by Victor Howard, chairman, to serve as "impartial agent." All tire dealers in Rhode Island, Mr. Howard states, are required to file and post prices, as determined by the local association, with Mr. Ladd at the Chamber of Commerce Bldg., and the same prices must be posted in each place of business.

Retail Tire Code "All Washed Up"

The retail tire dealers' code of fair practice, designed to operate under the NRA, was declared "all washed up" September 21 after manufacturers' representatives at a joint meeting in Chicago, Ill., September 20, rejected the plan to levy a fee on tires to raise money for code enforcement. Code offices in Chicago, consequently, will be closed, and retailers must turn directly to manufacturers for any help they get in stabilizing retail price conditions, it was reliably reported.

Scrap Rubber Authorities

Approval of the following code authorities for the rubber scrap trade was announced by NRA on September 20: Edward B. Friedlander, the Lowenthal Co., Chicago, Ill.; Samuel Greenfield, Samuel Greenfield Co., Inc., Buffalo, N. Y.; Julius Muehlstein, H. Muehlstein & Co., Inc., New York, N. Y.; Philip Hirsch, Hirsch Salvage Co., Cleveland, O.; A. Schulman, A. Schulman, Inc., Akron, O.; Aaron Pollack, Pollack Bros. Scrap Rubber Corp., Brooklyn, N. Y.; and George Liftig, S. J. Liftig & Son, Ansonia, Conn.

The National Exposition of Power and Mechanical Engineering will hold its next biennial exposition during the week of December 3 to 8, 1934, at Grand Central Palace, New York, N. Y. New operating exhibits will reveal the latest developments in mechanical engineering and stimulate the general interest now centering on complete power plants including boilers, air conditioning equipment, industrial refrigeration, and Diesel engines.

A. S. T. M. Standing Committee Officers

The following named Standing Committee officers were recently elected for the coming 2-year period by the American Society for Testing Materials, 260 So. Broad St., Philadelphia, Pa.

Committee D-11 on Rubber Products: chairman, H. A. Depew, research chemist, American Zinc Sales Co.; vice chairman, C. H. Zieme, service engineer, The Republic Rubber Co.; secretary, Arthur W. Carpenter, manager of testing laboratories, The B. F. Goodrich Co.

Committee D-13 on Textile Materials: chairman, H. J. Ball, professor of textile engineering, Lowell Textile Institute; vice chairmen, B. H. Foster, manager, textile section, United States Rubber Co.; J. M. Weaver, sales engineer, general asbestos and rubber division of Raybestos-Manhattan, Inc.; secretary, W. H. Whitcomb.

Committee D-11 on Rubber Products will give considerable attention to the development of non-destructive tests of materials to protect persons from electric shock. The group working on insulated wire and cable plans to prepare a table of standards for rubber insulation thicknesses for circuits of 8,000 volts to the highest voltage in commercial use. It is expected definite recommendations will be made shortly on methods of testing accelerated age deterioration of rubber. Active work on compression testing is under way, also drafting of tests for properties of rubber and rubber-like materials in liquids.

Based on fundamental research such as that conducted in the laboratories of the United States Bureau of Agricultural Economics, Committee D-13 plans during the coming year to present specifications and methods covering cotton fiber quality. Methods of test applicable to numbered ducks are being investigated, and a method of reeling sewing threads under definite tension is being studied.

Laminated "Sandwiches"

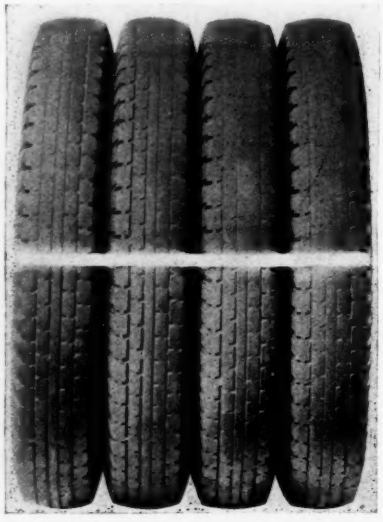
Synthane Corp., Oaks, Pa., is manufacturing, under Bakelite Corp. patents, a new material consisting of layers of soft rubber "sandwiched" between sheets of Bakelite laminated. An infinite number of combinations are possible since the layer thicknesses may be varied as well as the number of alternating layers of rubber and laminated material. Many uses suggest themselves: for gaskets, vibration-absorbing machine mountings, table tops and serving trays, furniture construction, perhaps even for wall paneling; in fact, wherever strength, quietness, and resiliency are demanded.

The Rubberset Co., Newark, N. J., moved its general offices from the plant in Newark to 75 West St., address of Bristol-Myers Co., which recently purchased the brush company.

Artlee Photographers

Fred V. Stroming

Soft Rubber between Bakelite Laminated Sheets



Triple-Tempered Tread Rubber in U. S. Royal Tires Outwears Old Tempered Rubber Stock—Upper Half, Old Tread; Lower Half, New Tread

Report Tire Stocks Promptly

The United States Department of Commerce, Leather-Rubber-Shoe Division, Washington, D. C., again will make a survey of dealers' stocks of tires as of October 1. E. G. Holt, assistant chief of the division, states that the unusual price situation which has obtained in the domestic market during recent months and the gradual tightening of restrictive regulations on crude rubber production make it desirable that the department obtain as accurate a result as possible in this survey.

Company President

Fred V. Stroming, president of the Goodyear Sundries & Mechanical Co., Inc., 95 Chambers St., New York, N. Y., was born in Punxsutawney, Pa., January 3, 1891. He attended Rockaway High School and Long Island College, graduating from the latter in 1909 after having taken a general business and technical course.

The next year he began his business career as a purchasing clerk with the Lackawanna Railroad. In 1916, however, rubber won him over, and he joined the Manhattan Rubber Mfg. Co., Passaic, N. J., becoming thoroughly trained in manufacturing and factory production, mainly specializing in hose. Then from 1921 to 1927 Mr. Stroming was manager of the mechanical goods and the sundries and clothing departments of the Goodyear Rubber Co., Middletown, Conn. In 1927 he organized Goodyear Sundries & Mechanical Co., Inc., to take over the liquidated divisions of the Goodyear Rubber Co., the factories of which were completely turned over to making rubber footwear.

Mr. Stroming maintains his residence in Passaic.

Duphax

Duphax A and B, respectively soft and hard, are 2 grades of factice specially developed for DuPrene compounding. The primary reason for their use is the fact that they greatly improve the processing qualities, reduce the cost, and often improve the properties of the finished DuPrene product.

J. Edwin Davis, an executive of the New York Rubber Corp., Beacon, N. Y., and a well-known rubber man, died in his sleep at the Hotel Holland, September 25. His obituary will appear in our next issue.

The United States Rubber Co.'s 77,028 spindleage tire fabric units, Winnsboro Mills at Winnsboro, S. C., reopened September 20 under protection of South Carolina National Guardsmen. These units plan to operate 3 shifts, it is officially announced, with expectation of normal production. The units normally employ 500 on each of 3 shifts, making a total of 1,500 operatives.

NEW ENGLAND

The rubber industry in New England now is operating on schedules about the same as those effective during the summer. As this section of the country is largely devoted to footwear and mechanical rubber goods, prospects depend upon the weather as well as upon other factors, including policies of the administration in Washington. One authority estimates the current rate of production to be about 50 to 60% of the 1929 rate. In comparison with 1933, however, sales show a satisfactory gain.

Yet manufacturers of rubber machinery are less encouraging. They declare that not only are rubber manufacturers not buying machinery and equipment, but their business is very quiet.

For several days the earlier part of last month Rhode Island mills and manufacturing plants identified with all branches of the textile industry were in the throes of picketing, disorder, rioting, mob activities, and other phases of an extensive labor strike. Thousands of dollars' damage resulted. One of the worst sufferers was the American Wringer Co., Woonsocket, although the concern has nothing to do with the textile industry. On September 11 every large plate glass window in the main office and scores of windows in the mill were broken. More than 100 feet of fence were ripped from the boundaries of the company, and one of the company's truck trailers was seized and overturned in the street. General Manager George R. Keltie estimated that the damage amounted to over $2,000.

Flat elastic braids, manufactured in great variety in Rhode Island braiding mills, are made on machines varying in size from 13 to 65 carriers. These braids are formed by introducing rubber thread through the warp tubes in the braiding machine and braiding the yarns about them. The rubber is stretched nearly to the elastic limit, while it is being covered, and contracts after leaving the take-off head to its normal length. The rubber thread is usually wound on beams without tension, and the proper number of ends to make the desired braid is placed on the beam. The bulk of the rubber thread is cut from a sheet, making a thread of square cross-section and varying from ⅛-inch to $\frac{1}{16}$-inch and sometimes finer.

The Board of Purchase and Supplies of Bristol, R. I., voted to purchase 800 feet of fire hose at $1.10 per foot from a subsidiary of the United States Rubber Co.

Walter Joy, superintendent of the Bristol Mfg. Co., Bristol, R. I., in addressing the Bristol Rotary Club at a luncheon September 5, declared that those who believe that modern rubber footwear is the product of evolution in the industry are due to disappointment. The process used today in the manufacture of rubbers goes back to primitive dipping methods used by natives of the Amazon River. Modern rubbers are made along the same lines. The last holding the design is dipped into a latex solution and later pulled over a lining.

The Rhode Island Rubber Club held its first outing at the Warwick Country Club, Providence, R. I., September 20, 1934. The affair was well attended and decidedly successful. An excellent and abundant repast was served, and the club facilities for athletic games were well patronized. The program also included addresses by E. R. Bridgwater and W. B. Wiegand. The latter recounted some of the impressions gained on his recent trip to the Orient.

Philipp Brothers, Inc., 176 Federal St., Boston, Mass., manufacturer of chemicals, has added to its selling staff Walter R. Ritz, formerly with E. I. du Pont de Nemours & Co., Inc., Wilmington, Del.

Plymouth Rubber Co., Inc., Canton, Mass., has announced that the managing director of its sales organization, S. E. A. C. I., 4 Rue Danton, Levallois-Perret, France, P. G. de Lussigny, will be in America the early part of October to survey the American market and bring back with him new ideas in rubber for France, Belgium, and Switzerland. M. de Lussigny is interested in all new products which can be imported or manufactured, under a license, in France. His address will be c/o Mr. L. E. Pleninger, 500 Fifth Ave., New York, N. Y.

Gould Golf Ball Co., Wakefield, Mass., has named as its manufacturers' representative Leslie Bellows, 258 Broadway, New York, N. Y. He is on a trip covering western Pennsylvania, Ohio, part of New York, and New England, showing his spring and summer lines for 1935.

Lithograph Transfer

A NOVEL use of rubberized fabric is embodied in a lithograph transfer process recently patented. By this process ordinary colored lithographs are transferred to a fabric base, producing a finished product hardly distinguishable from a hand-painted canvas.

The process consists of attaching the picture by adhesion only to a very sticky rubberized fabric, removing the picture, but leaving the pigments, on the sticky side of the fabric, bringing out the colors by brushing on a solution, and fixing them permanently by applying a fixing solution. Since the finished picture is translucent, it lends itself readily to illumination, producing beautiful lampshades and illuminated advertising specialties. R. J. Boyle, 124 Main St.. Bristol, Conn.

NEW JERSEY

Business remains fairly good at most New Jersey plants. The textile strike benefited the rubber industry. Many plants received increased orders, and this is due to purchasing goods before higher prices went into effect. There has been a decided increase in druggists' sundries and hard rubber goods.

Acme Rubber Mfg. Co., Trenton, announces that business continues fairly good. President Horace T. Cook with his family spent several weeks at Fisher Island, N. Y.

Mercer Rubber Co., Hamilton Square, raised belting and rubber hose prices 5%. The concern reports business better than at this time last year.

Puritan Rubber Co., Trenton, found business during the late summer much better than last year's.

Pierce-Roberts Rubber Co., Trenton, continues at full capacity.

Whitehead Bros. Rubber Co., Trenton, is still busy in its mechanical goods and footwear departments.

The Pocono Co., Trenton, received increased orders for auto topping.

Jos. Stokes Rubber Co., Trenton, finds business unchanged during the past few months.

Thiokol Corp., Yardville, announces that business continues good.

Essex Rubber Co., Trenton, optimistic over the future, expects a large volume of business for the fall months.

Luzerne Rubber Co., Trenton, increased its hard rubber production.

New Jersey Rubber Co. plant, Lambertville, was badly damaged recently when a tank weighing over 50 tons and containing 13,600 gallons of water crashed through the roof and 2 floors of the structure. A number of conveyers and some machinery were wrecked. The factory, where rubber is reclaimed, has not been operating for some time, but is being kept in readiness. Superintendent Charles M. Dilts stated a portion of the plant will have to be razed and rebuilt.

The Thermoid Co., Trenton, recently was host to over 2,000 employes at the annual outing at Springdale Park. Fifty employes were awarded gifts for service ranging from 15 to 48 years, and prizes were given to 150 winners in sports contests. Thermoid is experiencing continued good business. Thermoid directors elected Frank A. Sharpe vice president in charge of sales.

Lambertville Rubber Co., Lambertville, applied for exemption from the price filing provisions of the rubber footwear division of the rubber manufacturing code, and the application was approved by the NRA, as were similar applications of 8 other rubber manufacturers.

Hugo Reisinger has established a machine shop at 223 Clay St., Trenton, to manufacture rubber molds for the trade.

FINANCIAL

Dividends Declared

Company	Stock	Rate	Payable	Stock of Record
American Hard Rubber Co.	8% Pfd.	$2.00 q.	Oct. 1	Sept. 15
American Wringer Co., Inc.	Com.	$0.62½	Oct. 1	Sept. 15
Dominion Rubber Co., Ltd.	7% Pfd.	$1.75 q.	Sept. 29	Sept. 20
Faultless Rubber Co.	Com.	$0.50 q.	Oct. 1	Sept. 15
Firestone Tire & Rubber Co.	Com.	$0.10 q.	Oct. 20	Oct. 5
Fisk Rubber Corp.	$6 Pfd.	$1.50 q.	Oct. 1	Sept. 12
Garlock Packing Co.	Com.	$0.20	Oct. 1	Sept. 22
General Tire & Rubber Co.	6% Pfd., Accum.	$1.50 q.	Sept. 29	Sept. 20
Goodyear Tire & Rubber Co. of Canada, Ltd.	Com.	$1.25 q.	Oct. 1	Sept. 15
Goodyear Tire & Rubber Co. of Canada, Ltd.	Pfd.	$1.75 q.	Oct. 1	Sept. 15
O'Sullivan Rubber Co., Inc.	Com.	$0.10	Oct. 1	Sept. 21
Pirelli Co. of Italy	Amer. Shares	$8.45	Oct. 6	Sept. 28
Plymouth Rubber Co., Inc.	7% Pfd.	$1.75 q.	.....	Oct. 15
Worthington Ball Co.	Class A Pfd., Accum.	$2.00	Aug. 25	Aug. 20

Company Reports

Jenkins Bros., 80 White St., New York, N. Y., and subsidiaries. Six months ended June 30: net income after depreciation and other charges, $110,259, equal, after 7% preferred dividend payments, to 71¢ a share on 125,744 common shares.

United Shoe Machinery Corp., 140 Federal St., Boston, Mass. Directors declared regular quarterly dividend of 62½¢ a share on common stock, and the regular quarterly dividend of 37½¢ a share on the preferred stock, both payable October 5.

Southern Asbestos Co., Charlotte, N. C., subsidiary of Thermoid Co. Six months ended June 30: net profit after all charges, but before taxes, $15,832, compared with $5,127 in the same period last year.

Thermoid Co., Trenton, N. J., and wholly owned subsidiaries. Six months ended June 30: net operating profit after interest, depreciation, and other charges, but before federal income tax, $93,446, compared with $409, before federal income tax, in the first half of 1933.

INTERESTING LETTERS

Rubber Code Classification Questioned

To the Editor: There has been a tendency on the part of rubber manufacturers to place on a jobbing basis concerns who, in our opinion, are not entitled to that classification. They may be legitimate jobbers in other lines, but their efforts in regard to rubber are confined in most cases to garden hose. This, as you know, is more or less a seasonable item, and if the rubber manufacturer depended entirely upon this type of jobber, they (the rubber manufacturers) would be out of luck for the balance of the year except for the distribution and sales by their own salesmen.

The writer's thought is that a rubber jobber who confines his efforts to rubber goods should come under a different classification than the so-called "Jobber" who handles, along with rubber, perhaps hardware, woodenware, contractors' equipment, etc.

Mechanical Goods Jobber.

New York, N. Y.
September 10, 1934.

U. S. Crude and Waste Rubber Imports for 1934

	Plantations	Latex	Paras	Africans	Centrals	Guayule	Manicoba and Matto Grosso	Totals 1934	Totals 1933	Balata	Miscellaneous	Waste
Jan. .....*tons*	44,988	973	182	61	..	..	..	46,204	31,110	73	693	32
Feb.	30,164	750	118	..	..	..	..	31,032	18,875	70	607	..
Mar.	43,204	901	450	..	..	50	..	44,605	27,879	169	415	157
Apr.	44,394	827	324	..	17	100	..	45,662	19,459	165	633	99
May	46,440	1,230	181	..	3	100	..	47,954	27,556	143	616	117
June	48,275	1,235	115	..	8	50	..	49,683	22,729	128	553	27
July	40,217	1,064	210	35	4	..	..	41,530	44,290	107	561	55
Aug.	31,971	1,022	145	10	..	100	..	33,248	44,802	67	672	84
Total, 8 mos., 1934.....*tons*	329,653	8,002	1,725	106	32	400	..	339,918	.....	922	4,750	571
Total, 8 mos., 1933.....*tons*	229,575	4,400	2,690	35	..	...	..	.....	236,700	1,021	4,947	13

Compiled from the Rubber Manufacturers Association, Inc., statistics.

MIDWEST

A report from the Midwest reads that the rubber industry has picked up, but no more than other industries. The outlook for winter business, though, is good because of previously postponed buying. Principal reasons given for this improved business in the rubber industry are new products constantly being marketed; seasonable weather; replenishment of low stocks; and part of the general slight increase in business as a whole. If labor troubles and other uncertainties are cleared a little, business may be much better than during the summer. In general, there is one factor possibly more favorable than a year ago. Inventories in many lines are smaller, and if retail trade continues to be as good in some centers as it has been the past few months, a demand should be created for considerable merchandise.

The Chicago Automobile Show is scheduled for Chicago, Ill., January 26 to February 2.

The S. A. E. Annual Production Meeting will take place in Detroit, Mich., October 10 and 11.

Monsanto Chemical Works recently purchased a half block of ground near its plant at 1724 So. Second St., St. Louis, Mo., for possible future expansion, reported Secretary W. W. Schneider. Three blocks away the Monsanto Chemical Co. is building a 3-story office addition to its main plant.

The National Sporting Goods Distributers' Association will hold its annual convention and National Sporting Goods Show at the Hotel Sherman, Chicago, Ill., January 28, 29, and 30, 1935. According to Secretary John Hatton, the office of the association now is at the Hotel Sherman.

Stephens-Adamson Mfg. Co., manufacturer of conveying, transmission, and screening machinery, Aurora, Ill., has named Vice President L. S. Stephens president to succeed D. B. Piersen, who became chairman of the board upon the resignation of W. W. Stephens. Other executives follow: R. C. Pierce, vice president and western manager; F. G. Adamson, treasurer; C. A. Krause, assistant treasurer; C. H. Adamson, secretary; M. A. Kendall, chief engineer; and E. J. Patton, advertising manager.

United States Latex Imports

Year	Pounds	Value
1931	10,414,712	$884,355
1932	11,388,156	601,999
1933	24,829,861	1,833,671
1934		
Jan.	2,521,961	$239,054
Feb.	1,983,210	193,732
Mar.	2,539,425	257,545
Apr.	2,988,131	321,390
May	3,151,740	368,642
June	3,266,318	421,317
July	2,757,167	385,733

Data from United States Department of Commerce, Washington, D. C.

OBITUARY

Western Rubber President

GEORGE B. SLATE, 70, president of the Western Rubber Co., Goshen, Ind., and prominent in civic affairs, died September 6, at his home, 628 S. Fifth St., following a stroke of apoplexy. He had been in failing health for several months, but his condition was not considered to be so serious.

The deceased was born in Millersburg, Pa., April 17, 1864, and when he was 10 years old the family removed to Millersburg, Ind., where he grew to manhood and received his education.

Mr. Slate then began work as a telegraph operator on the Lake Shore Railroad, now the New York Central, and for 15 years was the agent at Goshen. Later he was transferred to South Bend as city passenger and ticket agent. He soon resigned that position to become manager of the Western Rubber Co. In 1930 he was elected president.

He was a member of the First Methodist Church and prominent in the church activities. Fraternally he was a member of Masonic orders, active in Knights of Pythias circles, and also a member of the Rotary Club. His wife and daughter, Mrs. Milton M. Latta, and 2 grandchildren survive him.

Woman Executive

ON AUGUST 25 died Elizabeth A. Spurr, 63, former president of the Rubberset Co., Newark, N. J. Mrs. Spurr, following the death of her brother, Andrew Albright, in 1930, succeeded him to the presidency of Rubberset Co., and retained the position until the recent purchase of the company by Bristol-Myers Co.

The deceased is survived by her husband, 2 daughters, and a son.

Veteran Rubber Man

ARTHUR W. VAN ATTA, 59, former employe of the Lambertville Rubber Co., Lambertville, N. J., was found dead in bed September 13 at his home at Mountain Lakes, N. J. Death was due to heart trouble.

Born in Washington, N. J., Mr. Van Atta moved to Lambertville as a child and was employed by the rubber company after completion of his public school education. He served for more than 30 years as bookkeeper and later was made purchasing agent. For 5 years he also acted as city clerk of Lambertville.

Mr. Van Atta, who is survived by his widow, was a 32d degree Mason and member of the Tall Cedars of Trenton. He was affiliated with the Episcopal Church. Burial was at Lambertville.

Former Firestone Employe

ANOTHER of the original employes of the Firestone Tire & Rubber Co., Akron, O., passed to his eternal reward when Robert McClister died, September 10, while reading his newspaper. Mr. McClister, who was 75, had been retired by Firestone 10 years ago.

He was a founder and a trustee of the Miller Ave. Reformed Church and a member of the Wadsworth Masonic Lodge for over 50 years. Funeral services were held at the church September 13.

Surviving are his widow, 2 daughters, 3 sons, 2 sisters, and 3 brothers.

Pacific Coast

From the Northwest comes a report that trade in mechanicals has been very stable, and the outlook continues promising. It is felt prices are becoming more stabilized than they have been in the past, and this condition should promote a more healthy state in the rubber manufacturing industry.

In California the industry, although enjoying its share of business this year, anticipated a tapering off of orders beginning September 1, with a nominal let-up through the winter. No substantial change is expected before the seasonal uptrend next spring.

David Spence, formerly connected with the guayule interests of the Continental Rubber Co. of New York, for the past year has been engaged in private researches on rubber in his own laboratory at Carmel, Calif.

The Miner Rubber Co., Ltd., Granby, P. Q., Canada, reports a decided improvement in the last few weeks. The factory is working 6 days a week and hopes to continue so throughout the winter. Other Canadian manufacturers also find business good.

THE PURCHASE OF RAILWAY MATERIALS and supplies in the United States during 1933 increased for the year compared to 1932. Purchases of rubber and leather goods amounted to $4,265,000.

Research on Modified Rubbers

I. Chlorinated Rubbers from Latex[1]

THE reaction between hypochlorous acid and latex yields additive and substituted products of varying composition. When less than one molecular proportion of hypochlorous acid per rubber unit (C_5H_8) is employed, the composition of the product corresponds closely to that expected to arise from an additive process in which one molecule of the reagent becomes attached at each ethylenic center of the rubber molecule, but when hypochlorous acid in excess of one molecular proportion is employed, much substitution of hydrogen by chlorine accompanies the addition of the reagent at the ethylenic centers. Similar products are obtained if instead of adding aqueous hypochlorous acid, chlorine gas is passed into latex containing sodium bicarbonate. The reaction products are isolated as insoluble powders, readily decomposable by heat and prone to attack by alkalis and strong minerals acids.

Materials of still greater chlorine content are obtained if subsequent to the chlorination process outlined above, the temperature of the aqueous suspension is raised to 80-100° C. and the passage of chlorine continued. In this case, however, the properties (e.g., composition and solubility) of the reaction products are profoundly influenced by a somewhat unstable constituent of the latex serum; whenever this constituent is present the chlorination products are soluble in a number of the higher boiling solvents for rubber. This constituent has not been isolated, but is probably a protein.

II. Action of Hypochlorous Acid on Rubber[2]

When rubber in solution is treated with aqueous hypochlorous acid, much replacement of hydrogen by chlorine accompanies the addition of the components of the addendum at the ethylenic linkages, especially where the reagent is present in excess of that required to saturate the unsaturated centers. In contradistinction to products derived by the addition of hypochlorous acid to latex, those obtained from rubber solution dissolve readily in various organic solvents when freshly prepared; while the most highly chlorinated materials (Cl content greater than 60%) are readily soluble in the usual solvents for rubber. Since the soluble products are here shown to contain a considerable percentage of hydroxyl groups, the insolubility of the latex products cannot be attributed to their high hydroxylic content.

[1] "The Preparation of Chlorinated Rubbers from Latex; Hypochlorination and Chlorination Processes," G. F. Bloomfield and E. H. Farmer, abstracted from *J. Soc. Chem. Ind.*, 53, 43 T (1934).

[2] Abstracted from "Action of Hypochlorous Acid on Rubber," G. F. Bloomfield and E. H. Farmer, *Ibid.*, 53, 47 T (1934).

Editor's Book Table

NEW PUBLICATIONS

"Age-Rite HP." R. T. Vanderbilt Co., 230 Park Ave., New York, N. Y. This 8-page pamphlet punched for inclusion in the "Vanderbilt Note Book" contains notes, formulae, and test data on the effectiveness of Age-Rite HP against flex cracking of tire treads and other high carbon stocks, soles, and all compositions subject to high temperatures in service.

"The 'Flectol' Antioxidants." The Rubber Service Laboratories Co., Inc., Akron, O. This booklet presents physical data on Flectols as used in test stock aged and tested under research conditions. All test results reported show the excellent properties of this group of antioxidants in compounding against deterioration by flex cracking and other oxidizing influences.

"Chemicals for the Rubber Industry. Accelerators, Antioxidants, Softeners, Colors, and Miscellaneous Materials. Specifications and General Information." The Rubber Service Laboratories Co., Inc., Akron, O. This booklet catalogues the company's rubber compounding chemicals listed in the title. The brief general discussion of each type of material is interesting and helpful to the rubber compounder, who is further aided in the intelligent use of the materials by the specifications, general properties, and recommended uses of each product.

"M. U. F. Antioxidant—Non-Discoloring Type." The Naugatuck Chemical Co., 1790 Broadway, New York, N. Y. Description and general characteristics of M. U. F. are given, also tests and graphs showing its non-discoloring and antioxidant effect under severe service conditions.

"Carbon Joe's Gastex Gazette." General Atlas Carbon Co., 60 Wall St., New York, N. Y. In the current issue of this breezy one-page house organ Carbon Joe writes, "Gastex is the ideal pigment for use in a large variety of rubber products, because of its ease of handling and processing, excellent physical and aging properties in low and high volume loadings."

"Tools for the Shoemaker." United Shoe Machinery Corp., Boston, Mass. In this book the complete tool equipment used for manufacturing leather shoes is cataloged, illustrated, check listed according to its departmental uses, and further indexed individually. The rubber items are few, being confined to cleaners employed in the packing room. These include wheels and rolls of crepe rubber, semi-hard rubber erasers for shoe cleaning, and so-called dry cleaners or art-gum erasers.

"Southern Alkali." Southern Alkali Corp., Corpus Christi, Tex. This brochure serves to announce the opening of the new alkali plant at Corpus Christi, Tex., marking the beginning of a new industry for the South. The products of the plant include soda ash, caustic soda, both solid and liquid, modified sodas, and caustic ash.

"The Fallacy of Higher Wage Rates." Farrel-Birmingham Co., Inc., Ansonia, Conn. This booklet is the eighth in the series of editorials by Allen W. Rucker in collaboration with N. W. Pickering, president, Farrel-Birmingham Co., Inc. The lucid and convincing argument is based on statistical analysis of data compiled from the United States Census of Manufacturers, 1931. The booklet shows the fallacy and futility of arbitrary increases in wage rate and industry's responsibility to modernize processes and equipment with increased productivity and income per worker and no increase in prices in return for freedom from external interference.

"Neville Coal By-Products. Resins, Solvents, Tars." The Neville Co., Pittsburgh, Pa. This collection of loose leaf bulletins comprises data on the physical characteristics of special solvents, naphthas, tars, indene-coumarone resins, tar solvents, refined tars, high flash naphthas, etc., of interest in the rubber and other industries.

"Falk Motoreducers. Bulletin No. 272." The Falk Corp., Milwaukee, Wis. This fully illustrated data book brings together under one cover for the first time complete information regarding Falk Motoreducers. It contains also the first publication of 2-speed Motoreducer data. Many interesting and entirely new installation and application pictures are included.

"Johns-Manville Packings." Johns-Manville Corp., 22 E. 40th St., New York, N. Y. This catalog of asbestos and rubber packings applies to every industrial packing condition and heat insulation as well. It is a guide for the practical engineer on the selection of packings, with recommendations how to get the best results. The booklet is supplemented with notes on refractory cements and heat insulation materials.

Curodex

Curodex products are attractive and inexpensive preparations designed as deodorizers and odorants for rubber goods. They do not interfere with vulcanization, have no adverse effect on aging, and do not cause discoloration.

BOOK REVIEW

"The DuPrene Manual." E. I. du Pont de Nemours & Co., Inc., Wilmington, Del. Paper, 66 mimeographed pages, 8½ by 11 inches. Bibliography.

The purpose of this manual is to summarize in concise form all available information concerning the compounding and vulcanization of DuPrene plastic polymer that may be of assistance to those engaged in the manufacture of DuPrene products. No space is devoted to discussion of the chemical composition of DuPrene or of the process of making it nor of its commercial uses. Its rate of cure, oil resistance, and the effect of various swelling agents are fully covered.

The main part of the book embraces systematic discussions of the properties of unvulcanized DuPrene, and the suitability of various compounding ingredients grouped according to function: namely, vulcanizing agents, antioxidants, reenforcing pigments, filling pigments, pigment bearing diluents, softeners, and reodorants. Their effects are summarized in charted physical tests and discussed in recapitulation. Factory processing of DuPrene is outlined, and a number of formulas are given for DuPrene compounds designed for specific uses.

The manual will be valued by the rubber industry as an authoritative guide in the technology of DuPrene and its applications to commercial uses. A very excellent bibliography is appended, covering such phases as the chemical composition and the method of making DuPrene.

M. U. F.

M. U. F. is an antioxidant of the non-discoloring type. It is a grayish powder of 1.25 specific gravity and disperses readily in rubber mixes. It does not bloom out of either raw or cured rubber, requires no adjustment of accelerators or plasticizers, and does not influence the rate of cure or plasticity. Besides its excellent antioxidant properties this material exerts no appreciable discoloration of white or light colored rubber even when exposed to sunlight through ordinary glass. Such discoloration as does take place in direct sunlight may be washed off with water.

AN EMPLOYE, STRUCK ON THE ARM BY a sledge hammer, when holding a bar for a fellow worker, received a fracture involving the middle of the ulnar shaft. *Rubber Section, N. S. C.*

Rubber Industry in Europe

GREAT BRITAIN

Rubber Exhibition

The Rubber Growers' Association, collaborating with the Rubber Research Institute of Malaya, the Research Association of British Manufacturers, the London Advisory Committee for Rubber Research (Malaya and Ceylon), rubber manufacturers, and suppliers of scientific equipment and machinery, is arranging a Rubber Exhibition to be held in the Science Museum, South Kensington, London, for at least 3 months starting October, 1934. To insure that the exhibition will be as comprehensive as possible special advisory committees have been formed, which will be assisted by D. F. Twiss, S. S. Pickles, P. Schidrowitz, H. P. Stevens, C. Macbeth, G. S. Martin, B. D. Porritt, and A. Barclay, besides R.G.A. executives.

The story of the rubber industry from the growth of the tree to the many uses of the commodity will be demonstrated in 5 sections: plantation; manufacturing processes of rubber goods; scientific treatment and testing of rubber goods; applications; historical. A large-scale and complete model of an up-to-date rubber plantation factory, exhibits of *Hevea* diseases, samples of latices, and various grades of raw rubber will be on view in the plantation section. Elsewhere various machines will illustrate the different manufacturing processes; the chemical and physical properties of latex, vulcanized rubber, gutta percha, and balata will be shown in the scientific section as well as the size and motion of rubber particles; micromanipulators used to dissect the rubber globule and a Tintometer to express the color of latex numerically will also be displayed; while the different methods of concentrating latex will be demonstrated.

Compounding and vulcanizing will be treated comprehensively; various testing apparatus will be displayed, and educational exhibits to illustrate the manufacture of golf and tennis balls, pneumatic tires, rubber Wellingtons, printing plates, and hot water bottles will be staged. The importance of rubber in transport will be featured and a suite of rooms erected to demonstrate the uses of rubber in home and hospital.

Unsolved Rubber Problems

St. Reiner's discussion of solved and unsolved problems of the rubber industry, which appeared some months ago in *Kautschuk,* received sharp criticism in Germany, and now Philip Schidrowitz takes him to task in *The India Rubber Journal,* as follows:

"Firstly, as regards the use of vulcanized latex in cable manufacture St. Reiner airily says that 'the Vultex method described by Boggs relates to very thin cables, and thus replaces the ordinary varnishing process used for these, etc.' The *fact* is that Vultex is being used both for insulation and jacket work on quite a considerable scale, and that its use as a 'varnish' is quite secondary. This fact may not be known to St. Reiner, but to say definitely that something does not exist because one does not happen to have seen it or to have heard of it, is neither logical nor scientific.

"Of the same light and airy order of statement I may characterize St. Reiner's remarks in his first communication regarding a vulcanized latex product put on the market some years ago, and which (according to him) 'soon disappeared again for various well-known reasons.' Here again, I happen to be familiar with the *facts* and may tell our lighthearted critic that not only is the demand for this discarded (?) product growing daily, but that it is being used at a rate corresponding roughly to three-quarters to one million pounds of dry rubber per annum, and that largely for purposes which seem to be beyond the ken of Dr. St. Reiner."

British Notes

The Council of the Institution of the Rubber Industry has instructed the sub-committee, consisting of G. E Coombs, F. H. Cotton, G. Martin, S. S. Pickles, B. D. Porritt, P. Schidrowitz, and D. F. Twiss, to arrange a special latex program calculated to interest both members of the Institution and those connected with such industries as are already using latex or may in future do so. Accordingly a series of papers will be offered, the first of which, on "Production, Distribution, and General Properties of Latex," is to be read on October 9 by G. Martin at the Institution of Mechanical Engineers, London.

A molded leather composition is used in a new tire claimed unpuncturable. Starting from the inside of the tire outward, first are 2 layers of cord covered with ¼-inch of the leather composition followed by another layer of cord or rubber and a second ¼-inch jacket of leather composition, then again a cord layer and finally the outer rubber made up of the usual cushion and breaker strips. The tire, the invention of John Howard, of Rishton, is said not to be unduly heavy.

Both horse-drawn and pushcart types of milk-wagons are to an increasing extent being equipped with pneumatic tires in England.

A Rubber Proofers' Association has just been formed to regulate output and prices. The rubber proofing industry has for some time been in a very unsatisfactory condition, owing to severe competition and consequent undercutting of prices.

Since 1930 the Newcastle-upon-Tyne Zinc Oxide Co., Ltd., has more than trebled its output and is still expanding. To provide additional capacity it is to acquire 4 acres of lands adjacent to its present site at Birtley, Co. Durham.

The business of the Leyland & Birmingham Rubber Co., which experienced a severe set-back in 1931, continues to improve steadily and turned out total dividends of 6% over the year ended June 30, 1934, against 3% the year before.

Germany

The first half of 1934 Germany imported 393,879 quintals of crude rubber against 281,992 quintals during the same period of 1933, an increase of almost 40%. Imports of rubber manufactures also increased from 9,457 quintals, value 2,828,000 marks, to 10,057 quintals, value 2,947,000 marks. Total exports, however, fell from 66,285 quintals, value 23,156,000 marks to 63,208 quintals, value 2,947,000 marks. Total and automobile tubes were the only exports of importance to show increases: automobile casings, 68,661 against 61,823; tires for other vehicles, 1,320 instead of 1,103; and tubes for motor vehicles, 46,452 against 42,051. But tubes for cycles were 138,885 compared with 171,535; rubber thread, 1,261 quintals against 1,421 quintals; belting, 739 against 1,127 quintals; hose, 4,401 against 4,483 quintals; packing, 570 against 677 quintals; fabrics combined with rubber, 6,057 against 6,502 quintals; and other soft rubber goods, 27,694 against 32,003 quintals. For the most part the exports go chiefly to the Netherlands, whether for consumption there or reexport is, of course, not apparent. The chief imports included rubber thread, 1,260 against 547 quintals; inner tubes for automobiles, 3,274 against 3,596; automobile casings, 8,704 against 7,148; belting, 286 against 189 quintals; footwear, 13,888 against 41,093 pairs; and other soft rubber goods, 2,202 against 3,391 quintals.

A control bureau for carbon blacks

and blacks of all kinds has just been established to regulate the business and to insure an economical supply to consumers.

The firm of Flugel & Polter, G.m.b.H., Leipzig, is reported to have been purchased by Dr. Fritz Ries, of Saarbrucken. The firm, originally a so-called Kommandit Gesellschaft, was established 56 years ago. The new directors of the firm will be the former manager, technical director, and the new owner.

Soviet Republic

News of the progress of the Russian rubber industry is frequently exaggerated. However, even if we make necessary allowances for over-optimism, the fact emerges that Russian perseverance is beginning to lead to the desired result although numerous difficulties still remain to be overcome. There is still a great lack of system and efficiency in all branches of industry, leading to delays and obstructions of various kinds so that, for instance, operations have to be interrupted for lack of power, chemicals, fabrics, etc.; technological efficiency and control are by no means so good as they could be, and the output of laborers frequently is too low. The quality of the finished products suffers, and the percentage of rejects is unnecessarily high, from 13-18% in the case of rubber footwear and 40% and more in rubber soles. This condition is by no means ignored by leaders in the industry or the technical press; on the contrary emphasis is constantly being laid on the need of greater efforts toward improving production both in quantity and quality, and, it may be added, there is improvement here.

Among the problems that will be handled in the second 5-year period (ending 1937) are the manufacture of new American types of tires; the introduction of the molding process in footwear manufacture, which will aid in improving quality and reducing costs of manufacture; and the production of various new articles.

Synthetic rubber, as press reports indicate, receives much attention at the technological institutes and in factories. Production is increasing: in 1932, 375 tons were produced; in 1933, 2,370 tons. By 1937 it is hoped to make 20,000 tons, and to this end more factories are being built. The use of synthetic rubber in manufactures still presents many technical difficulties, and the high costs of production tend to limit its use. But constant efforts are made to devise better methods.

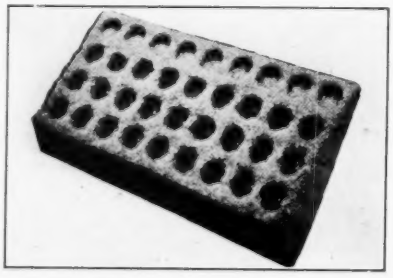
One of the most interesting experiments was conducted last year when 17 automobiles equipped with tires made in the Leningrad and Jaroslawl works, of natural, synthetic, and Tau Sagiz rubber, traveled from Moscow to Kara-Kum in Central Asia and back over a distance of 9,375 kilometers. Altogether 147 tires were used, 94 of synthetic rubber, 43 of natural rubber, and 10 of Tau Sagiz. The trial run was made under the most varying conditions of road and climate. Some of the synthetic tires made a very poor showing, breaking down after only a few hundred kilometers, but the majority ran 3,000 to 4,000 kilometers, and a certain proportion covered the entire route. The performance of the Tau Sagiz tires was fair, and, of course, the natural rubber tires made the best showing. Yet subsequent investigation showed that the defects in the synthetic tires were chiefly due to faulty building, for the synthetic rubber itself showed certain advantages over the natural rubber. Thus it retains its elasticity within greater ranges of temperature than natural rubber; it does not harden so readily at low temperatures, and it does not require vulcanization.

With regard to the production of regular rubber goods, it is interesting to note that while tires for automobiles increased from 559,000 in 1932 to 675,000 in 1933 and rubber soles from 14,000 to 25,700 tons, galoshes declined from 65,000,000 to 60,000,000 pairs, and the output of other goods, chiefly technical, represented a value of only 131,000,000 rubles against 186,300,000 rubles. If the program of the second 5-year plan is carried out, 4,100,000 automobile covers and over 15,000,000 tires for light autos and trucks will be produced in 1937.

Production is not able to cover home requirements; yet the U.S.S.R. does a certain amount of export business, chiefly to Asiatic countries. In 1933, 1,213 tons, value 1,570,000 rubles, were exported against 1,578 tons, value 2,500,000 rubles.

While imports of crude rubber were 31,270 tons against 30,378 tons, consumption actually was 28,000 against 30,000 tons. By 1937 it is expected the Russian rubber industry will require 90,000 tons of rubber.

In line with increased production, the factories are constantly being enlarged, and the capacity of the well-known Treugolnik (Red Triangle) factory, for instance, recently was doubled. Incidentally it may be mentioned that chemicals and other materials for the rubber industry are being produced in Russia; there is one factory for carbon black in Jaroslawl, and there are 4 plants in Maikop.



Bull. Rubber Growers' Assocn.

Rubber Seating for Cars

European Notes

The Polish Government, it is learned, is to operate the Pepege works in Graudenz, which were closed July 14. The Pepege concern has been in difficulties for some time, and it seemed for a while as though it would pass into the hands of French capitalists.

A new company, A. S. Norske Gummiprodukter, has been formed in Stavanger, Norway, to manufacture rubber footwear. The minimum capital is 450,000 kroner; 150,000 kroner have already been subscribed by Harald Bredstorff, formerly director of the Askim Gummiwarefabrik A. S.; while the founders have taken a further 150,000 kroner.

The Forenade Gummifabrikerna A.B., Helsingborg, Sweden, will be reorganized. This concern is the holding company of the Helsingborgs Gummifabriks A.B. and Ryska Gummifabriks A.B., Malmo. A third of the preferred shares is to be paid back in cash, leaving the preferential share capital at 12,080,000 kroner, and the dividend on these shares will be reduced from 7 to 6%. The common stock will be written off to 40% of the face value, which is about the present market value. Then Forenade is to be liquidated because, according to a new law, Swedish banks cannot lend money on shares of holding companies pure and simple. The new parent firm will be the Ryska, which, however, will change its title to A.B. Tretorn.

Automobile Seating

Rubber seatings for automobiles have been the subject of successful experimentation, particularly in England where favorable results are reported on a molded combination of rubberized hair and coiled wire springs. This construction is pictured herewith, showing the exposed coil springs embedded in regular order in the body of the cushion. The resiliency of the seat is reenforced by the springs, and its original shape is also well maintained in service.

A further improvement in car seating consists of employing interwoven rubber slatting in place of canvas webbing to support the upholstered cushion. The slats are comparatively few, measuring about 1¾ inches wide by ¼-inch thick. Their extensibility is limited to control the periodicity of the spring base. The slats are riveted to a metal angle frame, and the cross supports are spaced in the positions generally used by passengers. This type of suspension has been found entirely satisfactory when used with cellular rubber or pneumatic cushions.

THEY WILL BREAK! AN EMPLOYE WAS helping an operator tighten a mill. The mill bar broke, and both men fell to the floor. The employe was using a mill pan for a brace and in falling struck his ankle against the pan. Potts fracture left leg. *Rubber Section, N. S. C.*

Rubber Industry in Far East

NETHERLANDS EAST INDIES

Restricting Native Outputs

It is becoming more evident that the system of restricting native outputs by imposing a special export duty will have to make way for a more suitable plan, for while so far no serious difficulties have developed on account of the duty, complaints are manifold. Recently the Palembang Commercial Association informed the resident that owing to this duty tapping is becoming unprofitable to natives and exports of native rubber are declining. The association advises fixing a district export quota and allowing provincial heads to fix the special duty.

The Provincial Native Rubber Committee for the East Coast of Sumatra, which consists of persons prominent in the native world and in Chinese planting circles, under chairmanship of the head of the provincial government, wholly favors abolishing the special export duty on native rubber and substituting individual restriction. Opinion on this subject, however, in other than native circles appears divided so that for the present the system will be maintained. Meanwhile the above-named committee is said to be planning a survey of the potential output of native rubber to be conducted in public by the Kampong heads in cooperation with the notables; so public opinion will help to exercise a certain control. Further measures of control will be found in the data already available to government; while in addition inspectors familiar with natives and native rubber matters will be appointed. They will be largely recruited from the ranks of unemployed Europeans and natives. To cover costs of carrying out this scheme an export duty of ½ guilder cent per kilo has been proposed.

Natives in Pontianak, Borneo, have also requested the removal of the duty and have been asked by the resident to submit an alternative plan which will then be sent to the government. From Indragiri it is reported that the natives are making no difficulties on the score of the duty. Incidentally, the natives here are exporting their rubber in a drier state, and in connection with this tendency it is noted that imports of hand mangles have increased.

In the Riouw Archipelago, where rubber is cultivated chiefly by Chinese who prepare the rubber themselves and export it in dry, fairly thin sheets, the substitution of individual restriction for the duty has been recommended. It is stated that no serious reason exists why such a change should not be introduced here starting from January 1, 1935.

Better Days for Deli

The improvement in both the tobacco and the rubber markets is reflected in the return of a certain amount of prosperity in Deli, reports the Medan correspondent of the *Indische Courant*. Restriction has revived activity on many rubber estates, resulting in a serious shortage of European assistants and, in many cases, cut furloughs. Since a number of planters unemployed for 2 and 3 years are now also finding reemployment, there is no longer the same need for assistance to unemployed planters.

Figures for native labor are also rising. It is interesting to note the enormous extent to which free labor has been replacing contract labor since the depression set in. In 1929, 320,000 coolies were employed in East Coast Sumatra, and of these 266,234 were contract coolies. The depression caused the total to dwindle to 176,000 by 1932. But by then the situation as regards free and contract labor was reversed, the former numbering almost 140,000 and the latter 27,000. At the beginning of 1934 the total number of coolies was 164,696, of whom not quite 8,800 were on contract; during the succeeding months labor figures at last showed an upward turn again, and by May there were 172,273 coolies, but the number of contract laborers had decreased still further to only 5,542. These figures would indicate the approaching end of contract labor in Deli.

Tire Factories in Java

Shortly after Goodyear's plans to erect a tire factory in Buitenzorg became known, it was reported that Firestone intended to follow suit. But this report was contradicted, and it was stated that Firestone had merely asked for information. It now develops from an announcement in the People's Council that when Goodyear proved to be considering seriously the establishment of a factory in Java, by bringing experts over from America to investigate the factors of starting a rubber factory, the Government gladly gave the required information and necessary support. When Firestone approached the Government with the request to extend the same facilities to them as to Goodyear, however, the Government decided that present conditions did not warrant the erection of a second tire factory here, considering it extremely doubtful whether 2 such factories could operate profitably.

The Government feels that as long as Goodyear was first, it is no injustice to Firestone to withhold the desired information from them until it appears that there is indeed room for a second tire factory here. The Government makes it quite clear that it has no intention of hereby guarantying a kind of monopoly to one factory; on the contrary it will not hesitate to take suitable measures to combat a monopolistic tendency of the first concern if such should develop.

MALAYA

Footwear Competition

The recent failure of Tan Kah Kee, said chiefly due to efforts to take the British footwear market by storm, as it were, has once more brought home to British manufacturers the danger that menaces them from goods produced by cheap Oriental labor in the British territories, too. Recent reports regarding plans of the Bata company to expand its activities greatly in the East are not calculated to allay their fears.

Bata, already manufacturing shoes in India, intends to erect another factory in Singapore and a third in Shanghai. At the same time the existing chain stores are to be increased greatly. Bata already has 181 chain stores in the eastern countries and, if plans materialize, will have 590. These stores are to be distributed as follows: China, which now has 20, to have 200; India's 80 to be increased to 200; Malaya will have 30 instead of 20; Indo-China 80 instead of the existing 16; and Netherlands Indies, 80 instead of 45. Bata claims to be selling more than 40,000 pairs of shoes weekly in India alone and 5,000 pairs a week in Malaya.

Quite as disturbing in its way must have been the news that Japanese are offering canvas, crepe-soled shoes in Ceylon at 1s. 6d. per pair.

Still there are those who look upon all these activities leniently and even optimistically and say that the standard of living of the eastern masses thus is being raised and that eventually British manufacturers will also benefit from such a standard with its new needs. On the other hand penetration by the Japanese, Bata, etc., should be tolerated, they feel, because they alone are able to supply needs which in these days of low wages could not be filled in any other way. It is pointed out

that millions and millions in India, Ceylon, China, and elsewhere in the East go barefoot because they cannot afford any kind of foot-covering provided by the West. Indeed it has long ago been recognized that a wonderful potential market exists in these countries for a cheap type of footwear within the means of the masses, and it may be recollected that it was the special task of a propaganda department in Malaya to try to solve this very problem. Now Chinese and Japanese manufacturers and Bata evidently too have found a way to tap the rich market provided by the masses of the East.

There would not perhaps be so much anxiety about the situation among British interests, since it here concerns an article which they themselves cannot provide at the requisite low price, if there could be any assurance that these goods would stay in the East. But this condition, of course, is already not so, and the fear, sufficiently well-founded it must be admitted, exists that there may be a serious reverse movement and that the East may dominate the western markets.

Malayan Notes

The controller of rubber is very busy at present trying to prevent too great an influx of labor in certain districts and getting coolies to go to others where they prefer not to go, but where they are badly needed. At present coolies, who know Malaya, tend to flock to favorably situated estates and to neglect the others, with the result that even where the latter have received their quotas of labor, they cannot obtain the necessary coolies.

The Technological and Advisory Division of the Rubber Research Institute of Malaya will be abolished; consequently its head, R. O. Bishop, is leaving the country. Mr. Bishop has been in Malaya since 1919 and later joined the staff of the Rubber Research Institute. Local planters have a very high opinion of his ability, and his going will be sincerely regretted.

The Menkatab Rubber Co., Ltd., will increase its capital to $450,000 (Straits currency) by creating 750,000 additional ordinary shares of 20 cents each; 600,000 shares will be offered to shareholders at 35 cents each, and the remaining 150,000 shares will be kept in reserve. The proceeds are to be used to purchase the Peng Ann property.

Indo-China

According to available data Indo-China had 803 plantations in 1933, with a total area of 347,800 hectares, against 559 in 1930 with an area of 311,445 hectares. The planted area was 125,022 hectares against 126,653 hectares. Of the 803 plantations, 780 in Cochin-China covered 265,671 hectares, against 221,708 hectares, and a planted area of 96,115 against 96,821 hectares. Native Annamites owned 235 holdings in Cochin-China in 1933, with a total area of 14,143 hectares, of which 6,023 were planted. As the figures indicate, in Cochin-China we have for the most part to deal with smaller holdings both in the case of the French and the Annamites.

The situation is different in Cambodge and Annam, where most of the larger estates are, for Cambodge had 15 estates covering 72,618 hectares in 1933 against 67,929 hectares in 1930, of which 26,762 hectares were planted, against 23,415 hectares. In Annam in 1933 were 8 estates with a total area of 9,510 hectares against 21,808 hectares in 1930, of which the planted area was 2,205 against 6,416 hectares. According to these figures, there seems to have been considerable retrogression in rubber planting in Annam since 1930. More or less serious decreases are also to be noted in some of the provinces in Cochin-China: Baria, 5,743 against 6,374 hectares; Bienhoa, 25,711 against 42,466 hectares; and Hatien, 145 against 162 hectares. These are almost offset by increases in the rest of the provinces: Cholon, 216 against 75 hectares; Giadinh, 8,505 against 7,105 hectares; Tayninh, 8,255 against 2,836 hectares; Thudaumot, 37,852 against 47,498 hectares, so that in the end the total reduction in the planted area of Cochin-China was only 706 hectares (from 96,821 in 1930 to 96,115 in 1933).

Only about one-third of the total number of trees planted were tapped in 1933, that is 11,039,581 out of a total 33,718,222 trees. In that year there were 8,449,640 budded trees, more than half of which were in Cochin-China (5,893,661); by far the greater number of these (5,117,611) were in Thudaumot. This, by the way, seems to be the most progressive of the Cochin-China provinces, at least as far as rubber cultivation is concerned. In Cambodge in 1933 were 2,555,979 budded trees, but none in Annam.

The output in 1933 totaled 16,784,251 kilos, almost double that of 1930 when 8,629,778 kilos were produced. The share of Cochin-China was 14,372,051 kilos against 8,162,218 kilos; of Cambodge, 2,269,000 kilos against 346,500 kilos; and of Annam only 143,200 against 121,000 kilos.

It is learned that the Government of Indo-China is to levy an export tax on crude rubber, the proceeds to be used to cover the costs in connection with the international agreement on restriction.

Ceylon

A method of coating hessian with compounded latex to provide an attractive waterproof material has been developed by a Ceylon estate superintendent. The material is sold under the name "Rubaulins." The Ceylon Research Scheme supplied the necessary information regarding vulcanization, vulcanizing ingredients, etc. It is considered that there is a good field in the East for rubberized fabrics of this kind provided their aging properties are satisfactory.

British Malaya

An official cable from Singapore to the Malayan Information Agency, Malaya House, 57 Charing Cross, London, S.W.1, England, gives the following figures for August, 1934:

Rubber Exports: Ocean shipments from Singapore, Penang, Malacca, and Port Swettenham

	August, 1934	
To	Sheet and Crepe Rubber Tons	Latex, Concentrated Latex, Revertex, and Other Forms of Latex Tons
United Kingdom	13,396	272
United States	22,349	450
Continent of Europe..	8,253	359
British possessions	1,273	3
Japan	5,324	3
Other countries	959	..
Totals	51,554	1,087

Rubber Imports: Actual, by Land and Sea

	August, 1934	
From	Dry Rubber Tons	Wet Rubber Tons
Sumatra	2,390	5,222
Dutch Borneo	2,001	3,261
Java and other Dutch Islands.	392	34
Sarawak	1,635	79
British Borneo	435	63
Burma	158	6
Siam	1,430	478
French Indo-China	130	39
Other countries	98	14
Totals	8,669	9,196

Tire Production Statistics

	Pneumatic Casings—All Types		
	Inventory	Production	Total Shipments
1932	6,115,487	32,067,732	32,200,820
1933	7,110,456	36,243,384	35,274,970
1934			
Jan.	9,393,857	3,803,939	3,125,726
Feb.	10,403,282	4,205,039	3,186,363
Mar.	11,301,142	5,024,718	4,096,273
Apr.	11,621,310	4,626,881	4,305,227
May	10,792,770	4,322,536	5,171,748
June	9,912,780	4,211,905	5,071,403
July	9,153,712	3,252,251	4,032,689
	Solid and Cushion Tires		
1932	23,830	97,089	108,581
1933	.....	130,987	126,990
1934			
Jan.	29,971	13,792	13,946
Feb.	.....	12,440	12,797
Mar.	28,280	15,017	15,273
Apr.	.....	16,217	13,701
May	.....	18,639	17,551
June	.....	21,385	19,487
July	.....	18,283	17,807
	Inner Tubes—All Types		
1932	5,399,551	29,513,246	30,328,536
1933	6,251,941	34,044,689	33,112,472
1934			
Jan.	8,150,708	3,444,574	3,102,931
Feb.	8,892,154	3,956,082	3,223,591
Mar.	9,936,574	5,038,649	3,994,683
Apr.	10,267,331	4,593,370	4,212,020
May	9,741,304	4,228,239	4,754,683
June	8,531,574	3,974,408	5,149,951
July	7,811,828	3,425,352	4,193,210

	Cotton and Rubber Consumption Casings, Tubes, Solid and Cushion Tires		Consumption of Motor Gasoline (100%)
	Cotton Fabric Pounds	Crude Rubber Pounds	Gallons
1932...	128,981,222	416,577,533	15,703,800,000
1933...	148,989,293	512,489,423	15,880,746,000
1934			
Jan. ..	16,437,210	59,957,163	1,239,798,000
Feb. ..	18,720,923	63,400,171	1,047,816,000
Mar. ..	20,927,389	75,636,859	1,298,472,000
Apr. ..	19,371,041	69,930,591	1,374,870,000
May ..	18,785,428	67,636,897	1,601,922,000
June ..	17,715,577	61,849,622	1,524,432,000
July ..	13,267,392	49,352,977	1,583,190,000

Rubber Manufacturers Association, Inc., figures representing approximately 97% of the industry for 1934 and 80% for previous years, with the exception of gasoline consumption.

Patents and Trade Marks

MACHINERY

United States

1,967,486. **Bias Cutter.** S. O. Vennewitz, assignor to Sexton Mfg. Co., both of Fairfield, Ill.

1,967,853. **Cutter.** A. O. Abbott, Jr., Grosse Pointe Park, assignor to Morgan & Wright, Detroit, both in Mich.

1,968,255. **Roll Grinder.** R. C. Lewis, Ansonia, and G. V. Hultgren, New Haven, assignors to Farrel-Birmingham Co., Inc., Ansonia, all in Conn.

1,968,550. **Roller Grinder.** L. W. Barnes, Trumbull, assignor to Black Rock Mfg. Co., Bridgeport, both in Conn.

1,968,826. **Belt Press.** J. C. Graf, Philadelphia, Pa., assignor, by mesne assignments, to Baldwin-Southwark Corp., a corporation of Del.

1,969,067. **Belt Apparatus.** W. B. Freeman, Cuyahoga Falls, O., assignor to B. F. Goodrich Co., New York, N. Y.

1,969,068. **Annular Article Supporter.** W. B. Freeman, Cuyahoga Falls, O., assignor to B. F. Goodrich Co., New York, N. Y.

1,969,071. **Tube Apparatus.** A. A. Glidden and T. M. Knowland, assignors to Hood Rubber Co., Inc., all of Watertown, Mass.

1,969,083. **Plastic Material Mold.** W. G. Lawson, Akron, O., assignor to B. F. Goodrich Co., New York, N. Y.

1,969,101. **Continuous Rubber Article Forms.** W. L. Semon, Cuyahoga Falls, O., assignor to B. F. Goodrich Co., New York, N. Y.

1,969,104. **Ball Freezer and Dispenser.** C. R. Sibley, Marblehead, and A. F. Pym, Beach Bluff, assignors to Sibley-Pym Corp., Lynn, all in Mass.

1,969,127. **Rubber Slab Treater.** F. D. Fowler, Newton, assignor to Hood Rubber Co., Inc., Watertown, both in Mass.

1,969,160. **Banding Machine.** F. Slusher, Akron, O., assignor to B. F. Goodrich Co., New York, N. Y.

1,969,167. **Filling Lubricant Cavities in Wheels.** H. M. Dodge, Akron, O., assignor to B. F. Goodrich Co., New York, N. Y.

1,969,217. **Vulcanizer.** H. Haiss, Alliance, O., assignor to B. F. Goodrich Co., New York, N. Y.

1,969,221. **Marking Machine.** R. M. Johnson, Akron, O., assignor to Wingfoot Corp., Wilmington, Del.

1,969,226. **Centrifugal Separator.** H. O. Lindgren, Appelviken, Sweden, assignor, by mesne assignments, to De Laval Separator Co., New York, N. Y.

1,969,232. **Web Material Treater.** W. H. Nixon, Akron, O., assignor to Wingfoot Corp., Wilmington, Del.

1,969,252. **Hollow Article Apparatus.** C. L. Beal, Cuyahoga Falls, assignor to American Anode, Inc., Akron, both in O.

1,969,706. **Composite Sheet Article Apparatus.** S. Heintz, Watertown, Mass., assignor, by mesne assignments, to Hood Rubber Co., Inc., Wilmington, Del.

1,969,807. **Tire Rimming Tool.** W. Leonard, Malverne, N. Y.

1,969,906. **Winding Apparatus Tensioning Mechanism.** L. C. Sheldon, Hillsgrove, R. I.

1,969,937. **Treating Molds.** C. E. Maynard, Northampton, Mass., assignor, by mesne assignments, to Fisk Rubber Corp., a corporation of Del.

1,969,962. **Footwear Form.** V. H. Bodle, Newton, Mass., and E. B. Newton, Akron, O., assignors to B. F. Goodrich Co., New York, N. Y.

1,970,187. **Rubber Thread Chain-Looper.** A. Popper, assignor to the firm "Optimit" Gumové a Textilni Závody Akciová Společnost, both of Odrau, Czechoslovakia.

1,970,698. **Portable Repair Vulcanizer.** H. H. Hanson, assignor to Shaler Co., both of Waupun, Wis.

1,970,780. **Tire Builder.** H. D. Stevens, assignor to Firestone Tire & Rubber Co., both of Akron, O.

Dominion of Canada

343,374. **Rubber Thread Producer.** Dunlop Tire & Rubber Goods Co., Ltd., Toronto, Ont., assignee of H. Willshaw and F. C. Broadbent, co-inventors, both of Birmingham, England.

343,384. **Tire Core Remover.** Firestone Tire & Rubber Co. of Canada, Ltd., Hamilton, Ont., assignee of R. D. Hulslander, Akron, O., U. S. A.

343,385. **Plastic Material Treater.** Firestone Tire & Rubber Co. of Canada, Ltd., Hamilton, Ont., assignee of R. W. Allen, Akron, O., U. S. A.

343,445. **Corn Plaster Machine.** Scholl Mfg. Co., Inc., Chicago, Ill., assignee of G. H. Perryman, Teaneck, N. J., both in the U. S. A.

343,561. **Slitter.** Cameron Machine Co., New York, N. Y., assignee of R. McC. Johnstone, Short Hills, N. J., both in the U. S. A.

343,647. **Hollow Article Mold.** Viceroy Mfg. Co., Ltd., assignee of L. J. Clayton, both of Toronto, Ont.

343,949. **Centrifugal Bowl.** De Laval Separator Co., New York, assignee of G. J. Strezynski, Poughkeepsie, both in N. Y., U. S. A.

343,968. **Separable Fastener Apparatus.** Lightning Fastener Co., Ltd., St. Catharines, Ont., assignee of J. B. Freysinger, New Britain, Conn., U. S. A.

United Kingdom

408,145. **Glove Dipping Form.** R. F. McKay, Birmingham. (International Latex Processes, Ltd., St. Peter's Port, Channel Islands.)

408,390. **Tire Trimmer.** Dunlop Rubber Co., Ltd., London, and H. Stone, Birmingham.

408,707. **Tire Pressure Bag Remover.** Dunlop Rubber Co., Ltd., London, and H. Willshaw, Birmingham.

408,931. **Impregnating Apparatus.** J. Brandwood, Southport.

PROCESS

United States

1,967,267. **Fabric.** W. B. Serrington, assignor, by direct and mesne assignments, to Charak Chemical Co., both of Boston, Mass.

1,967,268. **Fabric.** W. B. Serrington, Roxbury, assignor to Charak Chemical Co., Boston, both in Mass.

1,967,809. **Hard Rubber Dust.** F. D. Chittenden, assignor to Revere Rubber Co., both of Providence, R. I.

1,967,904. **Rubber Surfacing Material.** E. Roberts, Montclair, N. J., assignor to Naugatuck Chemical Co., Naugatuck, Conn.

1,967,967. **Artificial Leather.** M. N. Nickowitz, Bridgeport, Conn., assignor to E. I. du Pont de Nemours & Co., Wilmington, Del.

1,968,809. **Artificial Turf.** C. C. Curtis, Cuyahoga Falls, O., assignor to B. F. Goodrich Co., New York, N. Y.

1,968,887. **Glove.** M. E. Hansen, assignor to American Anode, Inc., both of Akron, O.

1,969,128. **Inflated Ball.** M. M. Harrison, Akron, O., assignor to B. F. Goodrich Co., New York, N. Y.

1,969,203. **Hose Coupling.** C. C. Cadden and H. A. Bourne, both of Akron, O., assignors to B. F. Goodrich Co., New York, N. Y.

1,969,227. **Hose.** A. D. Maclachlan, Akron, O., assignor to B. F. Goodrich Co., New York, N. Y.

1,969,275. **Forming Rubber Articles.** S. R. Ogilby, Staten Island, N. Y., assignor to Naugatuck Chemical Co., Naugatuck, Conn.

1,969,397. **Compound Glass.** M. Dunkel, Cologne, W. Breuers, Ludwigshafen a. Rhine, and W. Wolff, Mannheim, assignors to I. G. Farbenindustrie A. G., Frankfurt a. M., all in Germany.

1,969,438. **Tire Bead.** J. C. Warden, Akron, O., assignor to Wingfoot Corp., Wilmington, Del.

1,969,497. **Abrasive Article.** R. C. Benner, assignor to Carborundum Co., both of Niagara Falls, N. Y.

1,970,513. **Hose Nipple Connection.** T. M. Knowland, Watertown, assignor to Boston Woven Hose & Rubber Co., Cambridge, both in Mass.

1,970,755. **Securing Together Fabric Materials.** F. A. Knoll, assignor to Condor Products, Inc., both of Buffalo, N. Y.

1,970,802 and 1,970,803. **Inflatable Rubber Goods.** J. H. Johnson, Toronto, Ont., Canada.

1,970,834. **Abrasive Article.** R. C. Benner, Niagara Falls, N. Y., G. H. Porter, Pittsfield, Mass., and C. S. Nelson, Niagara Falls, N. Y., assignors to Carborundum Co., Niagara Falls, N. Y.

1,970,835. **Abrasive Article.** R. C. Benner, assignor to Carborundum Co., both of Niagara Falls, N. Y.

1,971,044. **Printing Plate.** R. R. Lewis, Baldwin, assignor to Vulcan Proofing Co., New York, both in N. Y.

1,971,161. **Forming Tire Cover Struc-**

ture. G. A. Lyon, Allenhurst, assignor to Lyon, Inc., Asbury Park, both in N. J.

Dominion of Canada

343,572. **Elastic Fabric.** Columbia Narrow Fabric Co., assignee of A. A. Gobeille, both of Shannock, R. I., U. S. A.

343,762. **Thread Supplying Process.** Dunlop Rubber Co., Ltd., London, assignee of E. A. Murphy and R. G. James, co-inventors, both of Birmingham, all in England.

343,784. **Rubber Goods.** International Latex Processes, Ltd., St. Peter's Port, Channel Islands, assignee of E. A. Murphy and D. N. Simmons, co-inventors, both of Birmingham, England.

343,785. **Rubber Goods.** International Latex Processes, Ltd., St. Peter's Port, Channel Islands, assignee of E. W. Madge and A. N. Ward, co-inventors, both of Birmingham, England.

343,841. **Fibrous Material.** Wingfoot Corp., Wilmington, Del., assignee of G. DeW. Mallory, Akron, and F. H. Manchester and W. H. Nicol, both of Cuyahoga Falls, co-inventors, all in O., U. S. A.

343,924. **Floor Covering.** Sidney Blumenthal & Co., Inc., New York, N. Y., assignee of J. C. Emhardt, New Haven, Conn., both in the U. S. A.

343,964 and 343,965. **Rubber Thread.** International Latex Processes, Ltd., St. Peter's Port, Channel Islands, assignee of National India Rubber Co., Providence, R. I., assignee of E. Hopkinson, deceased, in his lifetime of New York, N. Y., both in the U. S. A.

United Kingdom

407,928. **Vulcanizing Balls.** Dunlop Rubber Co., Ltd., London, and D. F. Twiss and F. A. Jones, both of Birmingham.

408,091. **Attaching Covers to Metal Boxes.** Naamlooze Vennootschap De Vereenigde Blikfabrieken, Amsterdam, Holland.

408,472. **Insulating Submarine Cables.** Norddeutsche Seekabelwerke A. G., Nordenham, Germany.

408,562. **Producing Patterns on Articles.** E. Bemelmans, The Hague, Holland.

408,709. **Boot.** S. Kay & Co., Ltd., and W. Kay, both of Bury.

Germany

601,085. **Objects from Latex.** International Latex Processes, Ltd., St. Peter's Port, Channel Islands. Represented by C. and E. Wiegand, both of Berlin.

601,518. **Asbestos-Rubber Masses.** A. Ferretti, Milan, Italy. Represented by J. Reitstotter, Berlin-Steglitz.

601,809. **Combining Layers of Rubber, Leather, Etc.** F. W. Farr, Northampton, England. Represented by B. Kugelmann, Berlin.

CHEMICAL

United States

19,286 (Reissue). **Accelerator.** E. Zaucker and M. Bögemann, both of Cologne-Mulheim, and L. Orthner, Leverkusen-I. G. Werk, assignors to I. G. Farbenindustrie A. G., Frankfurt a. M., all in Germany.

1,967,220. **Latex Stabilizer.** H. J. Barrett and G. L. Dorough, assignors to E. I. du Pont de Nemours & Co., all of Wilmington, Del.

1,967,275. **Impregnating Process.** I. Williams, assignor to E. I. du Pont de Nemours & Co., both of Wilmington, Del.

1,967,292. **Plastic Composition.** L. J. De Holczer, assignor to New York Belting & Packing Co., both of Passaic, N. J.

1,967,336. **Latex Adhesive.** M. C. Teague, Jackson Heights, N. Y., assignor to Naugatuck Chemical Co., Naugatuck, Conn.

1,967,639. **Latex Adhesive.** W. H. Wedger, Belmont, assignor to Boston Blacking Chemical Co., Boston, both in Mass.

1,968,459. **Rubber-like Dispersion.** H. L. Levin, Rutherford, N. J., assignor, by mesne assignments, to Patent & Licensing Corp., New York, N. Y.

1,968,883. **Rubber Composition.** W. C. Geer, New Rochelle, assignor to B. F. Goodrich Co., New York, both in N. Y.

1,968,913. **Chemical Process.** W. L. Semon, Silver Lake Village, O., assignor to B. F. Goodrich Co., New York, N. Y.

1,968,914. **Age Resister.** W. L. Semon, Silver Lake Village, O., assignor to B. F. Goodrich Co., New York, N. Y.

1,969,242. **Dispersing Sulphur.** A. Szegvari, assignor to American Anode, Inc., both of Akron, O.

1,969,701. **Rubber Substitute.** F. Berdolt, Walden, assignor of ½ to M. E. Berdolt, Albany, both in N. Y.

1,969,932. **Rubber Substitute.** L. Laurin and E. Bidot, Dijon, France.

1,970,469. **Cold Moldable Rubber.** E. A. Murphy, assignor to Dunlop Rubber Co., Ltd., both of Birmingham, England.

1,970,470. **Road Surfacing Composition.** E. A. Murphy, assignor to Dunlop Rubber Co., Ltd., both of Birmingham, England.

1,970,704. **Coating Composition.** W. S. Melvin, Newburgh, N. Y., assignor to E. I. du Pont de Nemours & Co., Wilmington, Del.

1,970,972. **Age Resister.** L. Orthner, Leverkusen a. Rhine, and M. Bögemann and T. Weigel, both of Cologne-Mulheim, assignors to I. G. Farbenindustrie A. G., Frankfurt a. M., all in Germany.

Dominion of Canada

343,758. **Accelerator.** Dominion Rubber Co., Ltd., Montreal, P. Q., assignee of C. Coleman, Passaic, N. J., U. S. A.

343,759. **Accelerator.** Dominion Rubber Co., Ltd., Montreal, P. Q., assignee of H. L. Fisher, Leonia, N. J., U. S. A.

343,953. **Accelerator.** Dominion Rubber Co., Ltd., Montreal, P. Q., assignee of L. H. Howland, Nutley, N. J., U. S. A.

344,065. **Accelerator.** Canadian Industries, Ltd., Montreal, P. Q., assignee of M. Jones, Crumpsall, and W. J. S. Naunton, Prestwich, co-inventors, both in England.

United Kingdom

407,979. **Rubber Composition.** V. G. Walsh, Middlesex.

407,985. **Denture Discoloring Preventive.** C. Joannides, London.

408,141. **Treating Rubber Surfaces.** R. F. McKay, Birmingham. International Latex Processes, Ltd., St. Peter's Port, Channel Islands.)

408,523. **Rubber Adhesive.** R. F. McKay, Birmingham. (International Latex Processes, Ltd., St. Peter's Port, Channel Islands.)

408,729. **Microporous Rubber Product.** India Rubber, Gutta Percha & Telegraph Works Co., Ltd., H. J. Stern and W. W. Puffett, London.

408,930. **Rubber Composition.** W. J. Tennant, London. (Singapore Rubber Works, Ltd., Singapore, Straits Settlements.)

409,009. **Coating Composition.** I. G. Farbenindustrie A. G., Frankfurt a. M., Germany.

409,451. **Rubber Color.** J. Y. Johnson, London. (I. G. Farbenindustrie A. G., Frankfurt a. M., Germany.)

409,732. **Catalytic Agent.** Goodyear Tire & Rubber Co., Akron, O., U. S. A.

409,773. **Wetting Agent.** Rubber Service Laboratories Co., Akron, O., U. S. A.

Germany

601,457. **Rubber Compounds.** Hanseatische Muhlenwerke A. G., Hamburg.

601,477. **Vulcanizing Rubber.** I. G. Farbenindustrie A. G., Frankfurt a. M.

601,550. **Porous Masses.** A. Ihlenfeld, Koln-Kalk.

601,921. **Rubber Compounds.** Kolloidchemie Studiengesellschaft m. b. H. i. L., Hamburg.

602,064. **Coloring Plastic Masses.** I. G. Farbenindustrie A. G., Frankfurt a. M.

GENERAL

United States

19,252 (Reissue). **Tire Gage and Filling Valve.** A. S. Marchus, Oakland, Calif.

1,967,384. **Fly Swatter.** O. J. Urbanek, Chicago, Ill.

1,967,446. **Engine Crankshaft Vibration Damper.** A. J. Meyer, assignor to Continental Motors Corp., both of Detroit, Mich.

1,967,459. **Bottle Closure.** A. H. Warth, assignor to Crown Cork & Seal Co., Inc., both of Baltimore, Md.

1,967,720. **Key Operated Machine Cushion Cap.** G. W. Munson, E. Orange, N. J.

1,967,784. **Spray Head.** C. A. Schacht, Huntington, Ind.

1,967,785. **Siphon Strainer.** C. A. Schacht, Huntington, Ind.

1,967,859. **Catamenial Pad and Holder.** E. Burns, Detroit, Mich.

1,967,866. **Connecter.** W. G. Christopherson, Grosse Pointe Park, assignor to Morgan & Wright, Detroit, both in Mich.

1,967,908. **Ball.** L. E. Sneary, Ada, O.

1,967,928. **Life Saving Belt.** P. L. Drosnes, assignor to R. Drosnes, both of Pittsburgh, Pa.

1,967,929. **Top Spinning Roll Cover.** J. C. Emhardt and F. McD. McNair, both of Newburgh, N. Y., and G. L. Schwartz, Wilmington, Del., assignors to E. I. du Pont de Nemours & Co., Wilmington, Del.

1,967,977. **Puncture Repair Device.** B. W. Spitler, Cambridge, Mass.

1,968,028. **Paper Machine Slice.** W. B. Clements, assignor to Bryant Paper Co., both of Kalamazoo, Mich.
1,968,064. **Golf Club Grip.** L. A. Young, Detroit, Mich.
1,968,076. **Airplane Wheel.** E. F. Goodyear, Wishaw, and J. Wright, Coventry, assignors to Dunlop Rubber Co., Ltd., Birmingham, all in England.
1,968,136. **Disinfecting.** H. A. Gardner, Washington, D. C.
1,968,140. **Plastic Wax Board Liner.** D. M. Gray, assignor to Hazel-Atlas Glass Co., both of Wheeling, W. Va.
1,968,193. **Sun Spectacles.** M. M. Einson, Yonkers, N. Y., assignor to Einson-Freeman Co., Inc., a corporation of Del.
1,968,197. **Nonsinkable Detachable Vest.** R. J. Gazelle, Montreal, P. Q., Canada.
1,968,290 and 1,968,291. **Cushion Shoe.** J. F. Gilkerson, Milwaukee, Wis.
1,968,339. **Foundation Garment.** V. M. Eatman, Tuscaloosa, Ala.
1,968,593. **Marcel Hair Waver.** E. E. Baldwin, Denver, Colo.
1,968,606. **Tire Repair Patch.** W. L. Knapton, St. Paul, assignor of ⅛ to F. J. Collins and ⅛ to R. E. Williamson, both of Minneapolis, all in Minn.
1,968,616. **Golf Club Shaft** J. M. Oldham, assignor to L. A. Young, both of Detroit, Mich.
1,968,622. **Mopstick.** W. A. Smith, assignor to Stover Mfg. & Engine Co., both of Freeport, Ill.
1,968,657. **Dishwashing Machine.** E. S. Stoddard, Berwyn, assignor to Conover Co., Chicago, both in Ill.
1,968,658. **Dish Rack.** E. S. Stoddard, Berwyn, assignor to Conover Co., Chicago, both in Ill.
1,968,710. **Toy Boat.** W. A. Roehrig, Louisville, Ky.
1,968,832. **Surgical Stocking Heel.** E. C. Hinchliff, assignor to Burson Knitting Co., both of Rockford, Ill.
1,968,898. **Tie Holder.** A. Molitor, Philadelphia, Pa.
1,968,952. **Antiskid Device.** H. G. Metcalf and K. H. Bowen, assignors to Columbian Rope Co., all of Auburn, N. Y.
1,968,965. **Tire Valve.** G. Van D. Smith, Fayetteville, Ark.
1,968,967. **Elastic Seamed Hosiery.** H. B. Snader, assignor to Vanity Fair Silk Mills, both of Reading, Pa.
1,969,066. **Holder.** J. H. Flink, assignor to Hood Rubber Co., Inc., both of Watertown, Mass.
1,969,088. **Tire.** A. G. Maranville, Cuyahoga Falls, assignor to General Tire & Rubber Co., Akron, both in O.
1,969,118. **Inflatable Article Valve.** F. F. Brucker, Akron, O., assignor to B. F. Goodrich Co., New York, N. Y.
1,969,165. **Exerciser.** D. Turner, Hollywood, Calif.
1,969,212. **Milking Machine Connecter.** S. J. Erling, Nockeby, Sweden, assignor to De Laval Separator Co., New York, N. Y.
1,969,215. **Rectal Syringe.** G. J. Grant, Bristol, P. Q., Canada.
1,969,224 and 1,969,225. **Tire Valve.** J. D. Lear, assignor to Sterling Automotive Products Corp., both of Buffalo, N. Y.
1,969,253. **Brush and Paste-Tube Device.** E. Berthold, Brooklyn, N. Y.
1,969,266. **Furniture Cushion Support.** W. F. Herold, assignor to Bassick Co., both of Bridgeport, Conn.
1,969,279. **Toy Train Track Pad.** C. S. Satterthwait, Kenilworth, Pa.
1,969,400. **Puncture-Sealing Inner Tube.** A. G. Fitz Gerald, W. Newton, Mass.
1,969,487. **Insole.** F. W. Vogel, assignor to Brown Co., both of Berlin, N. H.
1,969,527. **Knee Protector.** B. C. Schnellbacher, Newark, assignor to C. W. Libby, E. Orange, both in N. J.
1,969,531. **Pipe Coupling.** I. Swedler, Cicero, and A. L. Greenlaw, Chicago, both in Ill., assignors to Flexo Supply Co., St. Louis, Mo.
1,969,640. **Flushing Valve.** F. G. Curtin, Medford, Mass.
1,969,792. **Cone Belt.** C. C. Gates, Denver, Colo.
1,969,797. **Oil Sealing Device.** C. R. Hubbard and R. M. Waples, assignors to Garlock Packing Co., all of Palmyra, N. Y.
1,969,831. **Syringe.** A. J. Williams, McLoud, Okla.
1,969,958. **Bathtub Safety Grip.** F. T. Alder, Mt. Vernon; R. Alder, administratrix of said F. T. Alder, deceased, assignor to W. H. Rudolph, both of New York, all in N. Y.
1,969,971. **Shoe Upper Marker.** C. F. Eaton, W. Newbury, assignor to Perfection Marker Co., Cambridge, both in Mass.
1,969,973. **Shoe Upper Marker.** C. E. Edwards, Manchester, N. H., assignor to Perfection Marker Co., Cambridge, Mass.
1,970,037. **Surfacing Unit.** A. C. Fischer, Chicago, Ill.
1,970,081. **Heated Hand Covering.** R. M. Eisendrath, Chicago, Ill.
1,970,089. **Container for Explosives.** F. A. Halverson, Glen Richey, Pa.
1,970,099 and 1,970,100. **Endless Track.** A. F. Masury, assignor to International Motor Co., both of New York, N. Y.
1,970,130. **Protective Device.** E. A. Dickenson, Aurora, assignor to A. E. Dickenson, Chicago, both in Ill.
1,970,159. **Automobile Tire Skate.** C. W. Zehnbauer, Belleville, N. J.
1,970,208. **Shock Absorber.** C. F. Warner, assignor of ½ to B. H. Warner, both of Lancaster, Pa.
1,970,398. **Master Cylinder Packing Cup.** E. I. Schwarz, Bronx, N. Y.
1,970,465. **Foot Bath.** M. H. Martindell and O. Stenmar, assignors to Jos. Stokes Rubber Co., all of Trenton, N. J.
1,970,468. **Tire Pressure Indicator.** J. McClure, assignor of 55% to N. P. Wood, both of Poteau, Okla.
1,970,474. **Artificial Denture Retainer.** W. F. Richards, Quincy, Ill.
1,970,497. **Windshield Wiper.** M. De Gregorio, Port Washington, N. Y.
1,970,509. **Belt.** G. F. De Wein, Milwaukee, Wis., W. D. Eakin, Hudson, O., and P. C. McNulty, Milwaukee, Wis., assignors, by direct and mesne assignments, of ⅓ to B. F. Goodrich Co., Akron, O., and ⅔ to Allis-Chalmers Mfg. Co., Milwaukee, Wis.
1,970,675. **Noncollapsible Inner Tube.** P. Tracy, Rydal, N. S. W., Australia.
1,970,754. **Bed Pad.** M. Jonasen, Chicago, Ill.
1,970,789. **Closet Bowl and Tank.** C. H. Zwermann, Robinson, Ill.; H. and C. H., Jr., Zwermann, executrix and executor of said C. H. Zwermann, deceased.
1,970,793. **Typewriter Key.** L. A. Amis, Dallas, Tex.
1,970,820. **Seat Cover.** J. F. Schoellkopf, assignor to Schoellkopf Co., both of Dallas, Tex.
1,970,831. **Liquid Dauber.** E. P. Allen, St. Louis, Mo.
1,970,968. **Electric Service Plug.** A. S. McCloy, Detroit, Mich., and S. F. French, Dobbs Ferry, assignors to Anaconda Wire & Cable Co., New York, both in N. Y.
1,971,052. **Playing Card Tray.** W. A. Reynolds, Shaker Heights, assignor to Reynolds Corp., Cleveland, both in O.
1,971,096. **Vaginal Syringe.** W. W. De Laney, assignor to Seamless Rubber Co., New Haven, Conn.
1,971,137. **Toy Gun.** C. Geraci, E. Boston, Mass.
1,971,266. **Flashlight Battery Attachment.** H. T. Kingsbury, assignor to Kingsbury Mfg. Co., both of Keene, N. H.

Dominion of Canada

343,292. **Bed Pan Cushion.** M. M. Fees, Prescott, Ariz., U. S. A.
343,312. **Tire.** A. Miller, Thurso, Scotland.
343,316. **Pneumatic Dispatch System Carrier.** J. T. Needham, N. Plainfield, N. J., U. S. A.
343,327. **Footwear.** C. M. Smith, Liverpool, N. S.
343,389. **Radiator and Fender Support.** General Motors Corp., Detroit, assignee of R. J. Waterbury, Pleasant Ridge, both in Mich., U. S. A.
343,446 and 343,447. **Valve Stem.** A. Schrader's Son, Inc., Brooklyn, assignee of S. T. Williams, Bellerose, L. I., both in N. Y., U. S. A.
343,480. **Coffee Filtration Apparatus.** A. Calimani and G. Moneta, co-inventors, both of Milan, Italy.
343,512. **Golf Club.** A. A. Lumley, Glasgow, Scotland.
343,579. **Stocking Supporter.** F.G.S.R. Syndicate, Ltd., London, England, assignee of Firma J. Agreus, assignee of W. Ohrström, both of Stockholm, Sweden.
343,587. **Ventilated Fabric.** Hood Rubber Co., Inc., assignee of A. A. Glidden, both of Watertown, and V. H. Bodle, Newton, co-inventors, both in Mass., U. S. A.
343,593. **Valve Grinding Tool.** K-D Mfg. Co., assignee of H. W. Kulp and M. C. Dellinger, co-inventors, all of Lancaster, Pa., U. S. A.
343,627. **Golf Club.** A. G. Spalding & Bros. of Canada, Ltd., Brantford, Ont., assignee of W. F. Reach, Springfield, Mass., U. S. A.
343,657. **Coffee Percolator.** A. and G. Moneta, trading as Giuseppe Moneta, both of Milan, Italy, assignees of T. Giusti, London, England.
343,668. **Cord.** C. F. Hansen, Oslo, and E. Meier, Sköyen, co-inventors, both in Norway.
343,720. **Sponge Rubber Article.** Anode Rubber Co., Ltd., St. Peter's Port, Channel Islands, assignee of P. Klein, Budapest, Hungary.
343,773. **Tire.** General Tire & Rubber Co. of Canada, Ltd., Toronto, Ont., assignee of General Tire & Rubber Co., assignee of A. G. Maranville, both of Akron, O., U. S. A.
343,774. **Aircraft Wheel.** General Tire & Rubber Co. of Canada, Ltd., Toronto, Ont., assignee of General Tire & Rubber Co., assignee of A. G. Maranville, both of Akron, O., U. S. A.

343,859. **Abradant Driving Head.** H. L. Myers, Toledo, O., U. S. A.
343,863. **Film Winder.** A. E. Shirlow, Caulfield, and T. B. McDiarmid, Melbourne, co-inventors, both in Victoria, Australia.
343,866. **Tire.** M. Banyai, Vienna, Austria.
343,867. **Brick.** G. W. Beldham, Farnham, England.
343,903. **Tubeless Tire.** F. A. Millican, Vancouver, B. C.
343,954. **Container and Closure.** Don Baxter, Inc., Glendale, assignee of D. E. Baxter, Los Angeles, both in Calif., U. S. A.
343,988. **Vacuum Cleaner Hose Connecter.** B. F. Sturtevant Co., Boston, assignee of G. W. Allen, Hyde Park, both in Mass., U. S. A.
344,003. **Shoe.** I. and L. Dorogi, co-inventors, and Magyar Ruggyantaárugyár Részvénytársasag, assignee of ½ of the interest, all of Budapest, Hungary.
344,032. **Drilling Machine Spring Device.** A. Hossfeld, Winona, Minn., U. S. A.
344,057. **Window Sash.** Adlake Co., assignee of C. M. Verhagen, both of Chicago, Ill., U. S. A.
344,080. **Hose Coupling.** Dunlop Tire & Rubber Goods Co., Ltd., Toronto, Ont., assignee of R. S. Buckman, Kimberley, B. C.
344,105. **Tire Safety Device.** Michelin & Cie., Clermont-Ferrand, Puy-de-Dôme, assignee of P. M. Bourdon, Paris, both in France.
344,108. **Wringer.** Nineteen Hundred Corp., assignee of T. W. Behan, both of Binghamton, N. Y., U. S. A.
344,138. **Football Valve.** William Sykes, Ltd., Horbury, assignee of W. J. Wycherley, Ossett, both in England.

United Kingdom

407,614. **Tire.** C. Bradley, Nashville, Tenn., U. S. A.
407,733. **Hair Waver.** W. R. McConkie and R. F. Caddiès, both of Irvine, Scotland.
407,831. **Coupling.** L. B. Dawson, London.
407,836. **Portable Bath Tub.** J. L. J. R. Verdini, Manche, France.
407,983. **Tennis Racket.** G. S. Bush, Bristol.
407,994. **Accumulator Plate.** L. Fuller, London; G. J. A. Fuller, Loughton; and E. W. Sudlow, Barking.
408,051. **Loose-leaf Binder.** Morland & Impey, Ltd., W. Shewell, and H. A. Cherry, all of Birmingham.
408,083. **Horseshoe.** B. P. Gray, Birmingham.
408,125. **Typewriter.** J. Q. R. R. Sherman, Dayton, O., U. S. A.
408,157. **Label.** Aktiebolaget Alos, assignee of A. G. S. Lindgren, both of Gothenburg, Sweden.
408,160. **Tennis Practicing Appliance.** J. B. Tracey, Willand.
408,189. **Sole.** H. Schulze, Leipzig, Germany.
408,195. **Vacuum Flask.** A. A. Thomas, New York, N. Y., U. S. A.
408,223. **Bottle Capper.** Aluminium, Ltd., Toronto, Canada, assignee of J. E. Sharp and M. M. Kipfer.
408,249. **Air Cushion.** F. T. Ridley, London.
408,270. **Embossing Machine.** E. G. Wilson, Liverpool.
408,287. **Door Buffer.** W. W. Hamill, Sutton Coldfield.
408,291. **Rope.** W. C. and J. A. S. Robertson, both of Aberdeen, Scotland.
408,355. **Spare Tire Cover.** N. Rycroft and Cornercroft, Ltd., both of Coventry.
408,377. **Railway Vehicle Wheel.** E. G. Budd Mfg. Co., assignee of J. Ledwinka, both of Philadelphia, Pa., U. S. A.
408,396. **Bomb Calorimeter.** T. C. Sutton and Griffin & Tatlock, Ltd., both of London.
408,407. **Lined Concrete Pipe.** Dunlop Rubber Co., Ltd., London, and D. F. Twiss, E. W. B. Owen, and W. McCowan, all of Birmingham.
408,423. **Window Guide.** J. S. Reid, Shaker Heights, O., U. S. A.
408,476. **Road Surface Marking Block.** H. J. Haynes, Portsmouth.
408,501. **Vacuum Cleaner Dust Bag.** Hoover, Ltd., Greenford. (Hoover Co., N. Canton, O., U. S. A.)
408,551. **Game.** A. R. Millard, Southampton.
408,557. **Chair Pad.** B. S. Davies, Woking, and P. A. Summers, Osterley.
408,580. **Ladder.** J. Weller, W. Horsley.
408,591. **Stuffing Box Packing.** M. Tamini, Milan, Italy.
408,592. **Pneumatic Spring Suspension.** F. Faudi, Dusseldorf, Germany.
408,603. **Cigarette Case.** M. A. Meyer and D. O. Bullen, New Malden.
408,607. **Toilet.** F. G. Rees, Swansea.
408,611. **Vacuum-sealed Canister.** E. Gore-Lloyd, Shepperton-on-Thames.
408,616. **Safety Razor.** L. H. Nelles, London.
408,619. **Cushion.** D. Moseley & Sons, Ltd., and G. E. Bermingham, both of Manchester.
408,639. **Cushion.** B. S. Davies and B. Wrigley, both of Woking.
408,682. **Sole Laying Pad.** British United Shoe Machinery Co., Ltd., Leicester. (United Shoe Machinery Corp., Boston, Mass., U. S. A.)
408,700. **Sheet Separator.** W. J. Richardson & Sons, Ltd., and C. Richardson, both of London.
408,724. **Yielding Gear Wheel.** H. G. White and H. Taylor, both of Ecclesall, Sheffield, and Associated Electrical Industries, Ltd., London.
408,733. **Teeth.** H. Schulze, Nowawes, Germany.
408,791. **Game.** W. E. Farquharson, Birkenhead, and W. E. Wilson, W. Kirby.
408,804. **Rotary Duplicating Machine.** G. H. Padgham, London.
408,816. **Draught Excluder.** A. Brooke, Coventry.
408,854. **Dynamometer.** Deutsche Werft A. G., Hamburg, Germany.
408,860. **Clothes Washer and Wringer.** A. A. Burry, Toronto, Canada.
408,882. **Fountain Pen.** S. Sorensen, (trading as Nordisk Import-Forretning), Fredericia, Denmark.
408,927. **Photographic Printer.** M. Z. Von Teschenbruck and F. W. Meier, both of Berne, Switzerland.

TRADE MARKS

United States

314,823. **GM.** Brake linings, hose, etc. General Motors Corp., Detroit, Mich.
314,886. Streamer containing the words: **"Foot Cradle;"** to the right appear the words: **"The Torson Shoe."** Footwear. Herold-Bertsch Shoe Co., Grand Rapids, Mich.
315,160. **Agra.** Hose and belting. United States Rubber Co., New York, N. Y.
315,176. **Featherweight.** Shower caps. I. B. Kleinert Rubber Co., New York, N. Y.
315,179. **Sally Wear.** Women's wearing apparel including footwear and rubber gloves. Smith-Kasson Co., Cincinnati, O.
315,207. **Courtdeck.** Footwear. Rogers Peet Co., New York, N. Y.
315,208. **Drygrip.** Footwear. Rogers Peet Co., New York, N. Y.
315,213. Representation of a crown above the words: **"Gold-Crown."** Heels and soles. Holtite Mfg. Co., Baltimore, Md.
315,257. **66.** Repair kits for inner tubes, etc. Phillips Petroleum Co., Bartlesville, Okla.
315,262. Label containing representation of a doorway between 2 trees, and the words: **"100. FaubG. Place St. Honoré, Beauvau. Marcel Rochas."** Ready-made garments including raincoats and yokes of rubberized fabrics. Société Anonyma: Marcel Rochas, Paris, France.
315,273. **Chuck Taylor.** Footwear. Converse Rubber Co., Malden, Mass.
315,284. Crest containing the words: **"Better Shoes by Farr,"** and across it the words: **"Far-Ahead."** Footwear. Farr Bros. Co., Allentown, Pa.
315,285. **Walk-Aid.** Footwear. Samuel Shapiro, doing business as Braintree Shoe Co., So. Braintree, Mass.
315,291. **"Gothdale."** Golf balls. Franklin Simon & Co., Inc., New York, N. Y.
315,292. **Napshields.** Surgical appliances. International Latex Corp., Rochester, N. Y.
315,293. **Shieldex.** Surgical appliances. International Latex Corp., Rochester, N. Y.
315,300. **Monsanto.** Chemicals. Monsanto Chemical Co., St. Louis, Mo.
315,335. **Dunlopillo.** Cushions, mattresses, and pads therefor. Dunlop Tire & Rubber Corp., Buffalo, N. Y.
315,348. **Seal-o-matic.** Inner tubes. B. F. Goodrich Co., New York, N. Y.
315,364. **Vanitex.** Rubberized fabrics. Van Cleef Bros., Chicago, Ill.
315,404. **Rubbermaid.** Household articles of rubber composition. A. Schulman, Inc., doing business as S. & O. Products, Akron, O.
315,408. **Dayco.** Printing rollers. Dayton Rubber Mfg. Co., Dayton, O.
315,428. Block containing the letter: **"Q"** separating the words: **"Reddy Shu Mitt."** Shoe shields. G. H. Quennard, Morristown, assignor to Shu-Mitt Corp., Newark, both in N. J.
315,432. Block containing representation of an hour-glass separating the words: **"Leisure League."** Tennis balls. J. S. Stanley, New York, N. Y.
315,571. **Texaco.** Automobile supplies and accessories. Texas Co., New York, N. Y.
315,613. **Matchless.** Jar rubbers. United States Rubber Co., New York, N. Y.
315,622. **Welford.** Clothing, including raincoats and footwear. Hecht Co., doing business as The Hub, and Hecht Bros., all of Washington, D. C.
315,824. **New Type.** Cable units, friction tape, etc. Okonite Co., Passaic, N. J.
315,825. Streamer containing the words: **"Jai-Alai"** above the words: **"Hi-Li."** Footwear. C. A. Saab, New York, N. Y.

Market Reviews

CRUDE RUBBER

MOST of the decline of from 30 to 40 points registered on the rubber exchange in the 4 weeks ended September 22 was due to the textile strike. The settlement of the strike on September 23, after the intervention of the President, was hailed with relief on all sides. The United Textile Workers of America accepted the findings of the President's Textile Inquiry Board, headed by Governor Winant of New Hampshire, and called back 420,000 workers to "join Roosevelt" in a program of peace.

Most of the trade news related to the restriction scheme: the imposition of taxes under the plan and the effects of restriction on output. Symington & Wilson, of London, estimates that production from Malaya, Ceylon, and the Dutch East Indies will be about 40,000 tons short of quotas, unless tapping is heavy enough for the rest of the year to meet the quota figures. Only 12% of a country's allotment can be carried over into the following year, and if less than 88% of the quota amount is exported, no carryover is permissible.

The taxes announced by the Dutch East Indies government are high, especially for native rubber. The People's Council voted a similar tax on estate rubber, but the government did not pass on it. The high tax brought up the question of whether the Dutch government was imposing the charge as part of the agreement or whether it was designed to bring in revenue for the ordinary expense of government. Native growers are said to be holding up exports in the hope that the government would reduce the export tax because of small shipments.

The consumption report showed takings greater than in July, but the comparison with a year ago was not so favorable. Imports, however, showed a marked drop, quite satisfactory to bullish interests.

Automobile production declined somewhat in August, and only 170,000 units are expected in September. The gross showing with last year is favorable, but the last quarter is not expected to have the gains shown earlier in the year.

Week ended September 1. A typical pre-holiday market prevailed in rubber this week: volume was fair; price fluctuations were small; news and outside interests were lacking; and most sales were from speculators evening up before the Labor Day week-end. Rubber followed the stock and other commodity markets principally, with the rise in silver lending some strength. Prices at the close were unchanged to 8 points lower than a week ago.

October was 15.84¢ unchanged; December 16.11 against 16.15; March 16.49 against 16.55.

Statistics showed July production on smaller estates to be 12,083 tons, and from European estates, 22,886 tons. Estates' stocks were 14,920 tons at the end of July, and dealers' stocks were 15,644 tons. July exports from the Dutch East Indies were 5,855 tons, and from outside possessions, 22,690 tons dry weight.

The only important cable was from Reuter's Trade News Service, as follows: "According to an item appearing in the London *Financial Times* from its Amsterdam correspondent the Commerce Association of the District of Palembang has sent a letter to the Government commissioner wherein it is stated that under the present export duty native rubber tapping is no longer remunerative; consequently export of native rubber is declining considerably. The association considers it necessary to fix district export quotas and to leave it to the district chief to fix a special export duty."

This cable lends strength to the contentions of those traders who believe that rubber for a long pull is a good buy because of the effect that restriction will eventually have on stocks on hand, both here and abroad.

Because the government is processing hides of drought cattle and flooding the market, shoe manufacturers invited the rubber industry to protest to the administration against the practice. Saying that millions of shoes with rubber heels and soles were previously made and sold to the government for relief purposes, George F. Johnson, chairman of the board of the Endicott-Johnson Co., sent telegrams to the rubber industry as follows:

"This business will be entirely lost to manufacturers of rubber soles and heels if the government plan prevails, as all relief shoes will hereafter be made with leather soles and heels. As your industry will be seriously affected by the proposed plan, we are calling the matter to your attention, thinking you might be willing to join us in protest by sending telegrams promptly to the President and Secretary Wallace."

The Outside Market was extremely dull with few price changes. September ribbed smoked sheets were 15⅞¢ unchanged; October - December 16¼ against 16⅛; and January-March 16⅝ against 16½.

Week ended September 8. Opening after a 3-day holiday the rubber market sold off, principally because of the depressing influence of the textile strike on this market and in London. The loss, however, was recovered later. On Wednesday a good shipment business sent prices from 21 to 27 points higher, and at the close quotations were from 4 to 6 points better than a week ago. Shipment statistics were favorable, and indications are that exports up to the end of August will be considerably less than the quota figures.

September contracts closed at 15.76¢, compared with 15.71¢ last Friday; October 15.89 against 15.84; December 16.15 against 16.11; March 16.54 against 16.49; May 16.79 against 16.74; and July 17.06 against 17.00. The Exchange will be open on Saturday beginning this week.

Exports from the Dutch East Indies for July were 27,791 tons, compared with 26,154 tons in June; shipments to Malaya were 17,865 tons in August, against 22,829 in July, indicating that progress is being made by the Dutch government in curtailing native output. Wet rubber received into Malaya during August was 9,196 tons, against 12,412 in July, and dry rubber received was 8,669 tons, against 10,417 in July; August shipments from Malaya were 52,641 tons, compared with 55,090 in July.

Cable news by Reuter dispatch announced that no more than 12% of permissible exports under the quota system can be carried forward into the next year, and if exports are less than 88% of the quota, no carryover is allowed. Symington & Wilson reported that because of a shipment of 5,000 tons, either to the United States or Russia, London stocks showed a sizable drop. The same concern estimates that shipments from Malaya, Ceylon, and the Dutch East Indies will be about 40,000 tons short of quotas, and unless made up before the end of the year, no further rubber can be shipped, under the regulations given in the Reuter dispatch above. The *Financial Times* of London reported natives were holding rubber in the hope that because of reduced exports the Netherlands Indian Government would reduce the export tax.

The National Automobile Chamber of Commerce put August production of motor vehicles by members at 167,407 units, a drop of 14% from July and 3% under last year. Production in the next few months is expected to drop

more. Last year at this time higher prices were in prospect and sales were good; this year the public apparently does not expect higher prices; consequently sales are declining.

The textile strike affected rubber since fabric is necessary for tire manufacture, but otherwise the market was strong—rubber seems to be in the hands of strong holders, and any sign of liquidation brings buyers into the market who have confidence in the long-term trend of prices under the restriction scheme now in force.

For most of the week the tone in the Outside Market was unchanged, but a strong shipment business on Wednesday bolstered prices, and manufacturers took a good quantity.

Ribbed smoked sheets were 15¾¢ for September, compared with 15⅞¢ last week; October-December 16.00 against 16¼; and January-March 16⅜ against 16⅝.

Week ended September 15. The rubber market started the week quietly, with slight recessions in sympathy with other markets, principally cotton, where the textile strike has caused a decline, until Friday, when a dispatch from abroad stated that Siam refused to comply with the restriction agreement. Volume jumped to over 9,000 tons, and prices lost from 25 to 33 points. The market firmed on Saturday, however, with gains of 13 to 20 points, but the week's average was from 35 to 62 points lower.

October closed at 15.29¢, compared with 15.89¢ last Saturday; December 15.54 against 16.15; January 15.66 against 16.28; March was 15.92 against 16.54; May was 16.21 against 16.79; and July was 16.48 against 17.06.

Siam's rejection of the export quota was upsetting in its effect, but after reflection the market rallied. The amount of rubber that Siam exports is small, and the cooperation of the larger producing areas more than offsets this deflection. Speculators bought heavily on the decline, and that the market was oversold was demonstrated by Saturday's rise.

New export duties become effective Monday for the Dutch East Indies as follows: 20 guilders per 100 kilos on dry rubber; 12 guilders on uncleaned scrap; 15 guilders for "all other" rubber, except for a few ports which must pay 16.50 Dutch guilders. A cable from the Hague revealed that the Dutch expect to impose an export tax on estate rubber even though it might affect the rubber trade from that point. It was not learned whether the tax would come under the restriction scheme or be imposed for revenue purposes. Another cable Thursday said that beginning October 1 the tax on native rubber would be 20 guilders per 100 kilograms on dry rubber and from 15 to 18½ guilders per 100 kilograms on other varieties of rubber. Any type of rubber not dry will be grouped under the classification "other."

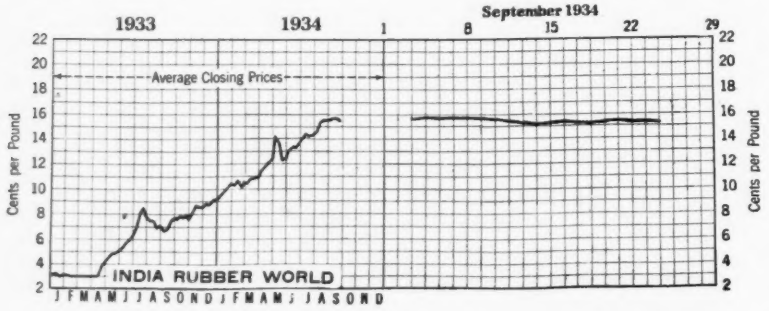
Despite the 5,000-ton sale of rubber in London, statistics at the week-end showed an increase of 1,773 tons in London and 1,623 in Liverpool. The totals at the 2 points are 50,028 tons and 58,006 tons, respectively.

Outside Market business was quiet early in the week, but when prices declined after the announcement of Siam's rejection of their export quotas, buyers bought in fairly large quantities.

September was 15¼¢ against 15¾¢; October-December 15⅜ against 16.00; January-March 15¾ against 16⅜; and April-June 16⅛ against 16¾.

Week ended September 22. The consumption report, the imminent meeting of the International Rubber Regulation Committee at which Siam's request for a revised quota will be discussed, and the textile strike were the principal influences in the rubber mar-

(*Continued on page 78*)



New York Outside Market—Spot Closing Prices Ribbed Smoked Sheets

New York Quotations

New York outside market rubber quotations in cents per pound

	Sept. 26, 1933	Aug. 27, 1934	Sept. 25, 1934
Plantations			
Rubber latex, normal .....gal.	72	58½	58½
Sheet			
Ribbed, smoked, spot	7 3/8/7 7/16	15½/15¾	15 3/8/15 7/16
Oct.-Dec.	7½/7 9/16	16 /16⅛	15 5/8/15 11/16
Jan.-Mar.	7¾	16 3/8/16½	15 11/16
Apr.-June	8	16¾/16⅞	16 7/8/16 3/8
Crepe			
No. 1 thin latex, spot	8 1/4/8¼	16 7/8/17½	16¼/16½
Oct.-Dec.	8¼/8⅜	17⅛/18	16⅜/16¾
Jan.-Mar.	8½/8⅝	17½/18⅜	16¾/17 1/16
Apr.-June	8¾/8⅞	18 /18¾	17¼/17⅜
No. 3 Amber, spot	5½	12½/12¾	12½/12¾
No. 1 Brown	5⅝	12⅝/12⅞	12½/12⅝
Brown, rolled	4⅜/4½	9½/ 9¾	10 1/8/10 3/8
Paras			
Upriver fine	8¾	11	11
Upriver fine	*11¾	*15	*14¾
Upriver coarse	..	7½	8½
Upriver coarse	*10	*11	*11
Islands fine	..	10½	11⅜
Islands fine	*11¾	*14¾	*14 3/5
Acre, Bolivian fine	9	11¾	11¾
Acre, Bolivian fine	*12	*15	*15
Beni, Bolivian	9	11¾	11¾
Madeira fine	8¾	11	11
Caucho			
Upper ball	..	7½	8½
Upper ball	*10	*11	*11
Lower ball	..	7	8
Pontianak			
Bandjermasin	7½	6	..
Pressed block	12	10¾	..
Sarawak	7½	6	..
Manicobas			
Manicoba, 30% guar.	†3¼	†8	†7¾
Mangabiera, thin sheet	..	..	..
Guayule			
Duro, washed and dried	12	12	12
Ampar	13	13	13
Africans			
Rio Nuñez	11	12	12
Black Kassai	9	12	12
Prime Niger flake.	20	20	20
Gutta Percha			
Gutta Siak	13	9¾	..
Gutta Soh	15	14¾	..
Red Macassar	1.50	1.50	..
Balata			
Block, Ciudad Bolivar	30	45	..
Manaos block	30	42	..
Surinam sheets	40	46	..
Amber	42	50	..

*Washed and dried crepe. Shipments from Brazil. †Nominal.

New York Outside Market—Spot Closing Rubber Prices—Cents per Pound

	August, 1934					September, 1934																
	27	28	29	30	31	1*	3†	4	5	6	7	8	10	11	12	13	14	15	17	18	19	20	21	22
No. 1 Ribbed Smoked Sheet	15¾	15⅝	15¾	15¾	15¾	..	..	15⅝	15⅞	15 13/16	15¾	15¾	15¾	15 11/16	15½	15⅜	15⅛	15¼	15 5/16	15 5/16	15 1/16	15¼	15 7/16	15⅜
No. 2 Ribbed Smoked Sheet	15⅛	15	15⅛	15⅛	15⅛	..	..	15	15¼	15⅛	15	15	14⅞	15	14⅞	14¾	14½	14½	14½	14½	14⅜	14⅝	14¾	14¾
No. 3 Ribbed Smoked Sheet	14¾	14⅝	14¾	14¾	14¾	..	..	14⅝	14 13/16	14⅞	14¾	14¾	14⅝	14⅝	14½	14⅜	14¼	14¼	14¼	14¼	14⅛	14⅜	14½	14½
No. 4 Ribbed Smoked Sheet	14⅝	14½	14⅝	14⅝	14⅝	..	..	14⅜	14⅝	14⅝	14⅝	14⅝	14½	14½	14⅜	14¼	14⅛	14⅛	14⅛	14	14¼	14⅜	14⅜	
No. 1 Thin Latex Crepe...	16¾	16¾	16¾	16¾	16¾	..	..	16⅝	16¾	16¾	16¾	16¾	16⅝	16⅝	16½	16⅜	16	16⅛	16¼	16¼	16	16⅛	16¼	16¼
No. 1 Thick Latex Crepe.	16⅝	16⅝	16⅝	16⅝	16⅝	..	..	16½	16⅝	16⅝	16⅝	16⅝	16½	16½	16⅜	16¼	15⅞	16	16⅛	16	15¾	16	16⅛	16⅛
No. 1 Brown Crepe	12¾	12 1/8	12 1/8	12 1/8	13	..	..	13	13⅛	13¼	13⅛	13⅛	13⅛	13⅛	13	13	12⅞	12⅝	12¾	12⅝	12⅝	12⅝	12¾	12¾
No. 2 Brown Crepe	12½	12⅜	12 1/8	12 1/8	12¾	..	..	12¾	12⅞	13	12⅞	12⅞	12⅞	12⅞	12¾	12⅝	12⅜	12⅜	12½	12⅜	12⅜	12⅜	12½	12½
No. 2 Amber	12¾	12 1/8	12 1/8	12 1/8	13	..	..	13	13⅛	13¼	13⅛	13⅛	13⅛	13⅛	13	12⅞	12⅝	12⅝	12¾	12⅝	12⅝	12⅝	12¾	12¾
No. 3 Amber	12½	12⅝	12¾	12¾	12¾	..	..	12¾	12⅞	13	12⅞	12⅞	12⅞	12⅞	12¾	12⅝	12⅜	12⅜	12½	12⅜	12⅜	12⅜	12½	12½
No. 4 Amber	12	12	12 1/8	12 1/8	12 1/8	..	..	12¼	12¼	12⅝	12¼	12¼	12¼	12¼	12⅛	12	11¾	11¾	11⅞	11¾	11⅝	11¾	11⅞	11⅞
Rolled Brown	9⅝	9⅞	9⅞	9⅞	10	..	..	10⅛	10¼	10½	10⅛	10⅛	10¼	10¼	10⅛	10	9¾	9⅞	9⅞	9⅞	9⅞	10	10⅛	10⅛

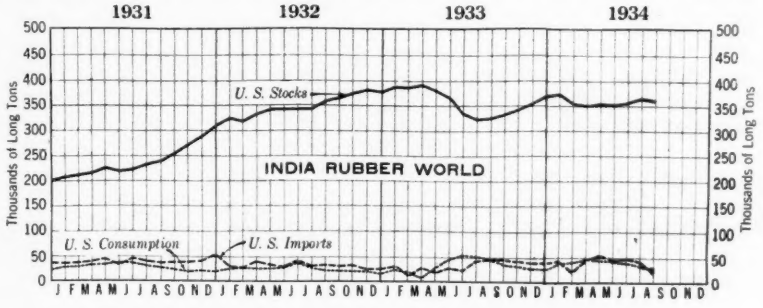
*Closed. †Holiday.

IMPORTS, CONSUMPTION, AND STOCKS

United States and World Statistics of Rubber Imports, Exports, Consumption, and Stocks

Twelve Months	U. S. Net Imports* Tons	U. S. Consumption Tons	U. S. Stocks on Hand† Tons	U. S. Stocks Afloat† Tons	United Kingdom Stocks†‡ Tons	Singapore and Penang, Etc., Stocks†‡ Tons	World Production (Net Exports)‡ Tons	World Consumption Estimated‡ Tons	World Stocks†‡§ Tons
1931	495,163	348,986	322,825	40,455	127,103	55,458	797,441	668,660	495,724
1932	400,787	332,000	379,000	38,360	92,567	36,802	709,840	670,250	518,187
1933	411,615	405,687	364,541	55,606	86,438	48,744	845,291	818,370	489,029
1934									
January ...	46,204	40,413	368,660	45,768	90,272	51,427	81,487	77,200	510,359
February ..	31,032	40,609	357,094	53,063	92,482	52,580	88,239	82,100	502,155
March	44,605	47,097	353,242	54,722	94,314	59,224	92,070	78,000	506,494
April	45,662	44,947	351,981	56,251	96,108	63,381	84,153	88,400	508,795
May	47,954	43,012	351,329	57,921	96,197	89,758	115,612	79,300	537,278
June	49,683	40,241	358,149	46,698	99,702	82,333	70,250	75,000	540,183
July	41,530	32,647	364,883	45,869	105,904	76,417	73,279	69,100	547,204
August	33,248	33,310	362,647	40,278	.....	.....	.....	.....	.....

*Including liquid latex, but not guayule. †Stocks on hand the last of the month or year. ‡W. H. Rickinson & Son's figures. §Stocks at the 3 main centers, U. S. A., U. K., Singapore and Penang.


1931
1932
1933
1934
U. S. Stocks
INDIA RUBBER WORLD
U. S. Consumption
U. S. Imports
Thousands of Long Tons
J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D

United States Stocks, Imports and Consumption

CRUDE rubber consumption by United States manufacturers for August totaled 33,310 long tons, against 32,647 long tons for July, an increase of 2.0% above July, but 25.0% below August, 1933, according to R.M.A. statistics. Consumption for August, 1933, was 44,428 (revised) long tons.

Crude rubber imports for August were 33,248 long tons, a decrease of 19.9% under July and 25.8% below August, 1933.

The estimated total domestic stocks of crude rubber on August 31 were 362,647 long tons, compared with July 31 stocks of 364,883 long tons. August 31 stocks show a decrease of less than 1% below July 31 stocks, but were 10.7% above stocks of August 31, 1933.

Crude rubber afloat for the United States ports on August 31 was 40,278 long tons, compared with 45,869 long tons afloat on July 31 and 53,084 long tons afloat on August 31, 1933.

London and Liverpool Stocks

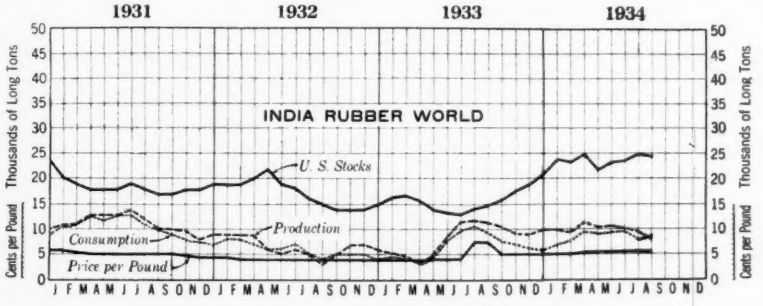
Week Ended	Tons London	Tons Liverpool
Sept. 1.....	48,255	56,383
Sept. 8.....	50,028	58,006
Sept. 15.....	52,320	58,182
Sept. 22.....	53,924	59,028

RECLAIMED RUBBER

WITH crude rubber firm around 15 to 16¢ rubber compounders will do well to note that the intrinsic value of reclaims such as whole tire and inner tube qualities possess a pronounced appeal which will be appreciated even more keenly as crude rubber prices advance. For example, whole tire of gravity 118 or less, high in rubber content, selling at 5 to 5¼¢ offers pronounced economic value supplemented by excellent compounding and desirable working properties. The same holds true in the case of inner tube reclaim at 7½ to 7¾¢.

Reclaimers are increasing their production and stocking up their warehouses in expectation of increased demand during the fall months.

Quotations are firm, steady, and unchanged from last month.


1931
1932
1933
1934
INDIA RUBBER WORLD
U. S. Stocks
Production
Consumption
Price per Pound
Thousands of Long Tons
Cents per Pound
J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D

Production, Consumption, Stocks, and Price of Tire Reclaim

United States Reclaimed Rubber Statistics—Long Tons

Year	Production	Consumption	Consumption Per Cent to Crude	United States Stocks*	Exports
1931	132,462	125,001	35.7	19,257	6,971
1932	75,656	77,500	23.3	21,714	3,536
1933	99,974	81,612	20.1	20,746	3,583
1934					
January	9,828	7,000	17.3	24,303	333
February	9,504	7,646	18.8	23,356	282
March	11,479	9,683	20.3	25,113	354
April	10,185	9,387	20.9	22,033	394
May	10,848	9,500	22.1	22,887	559
June	10,820	9,459	23.5	23,664	444
July	9,446	8,175	25.0	24,926	669
August	8,160	8,493	25.5	24,607	...

*Stocks on hand the last of the month or year.
Compiled by The Rubber Manufacturers Association, Inc.

New York Quotations

September 25, 1934

	Spec. Grav.	Cents per Lb.
High Tensile		
Super-reclaim, black	1.20	8¾/9
red	1.20	7 /7¼
Auto Tire		
Black	1.21	5 /5¼
Black selected tires	1.18	5¼/5½
Dark gray	1.35	6¼/6½
White	1.40	9¼/9½
Shoe		
Unwashed	1.60	6½/6¾
Washed	1.50	8 /9
Tube		
No. 1	1.00	13 /
No. 2	1.10	7½/7¾
Truck Tire		
Truck tire, heavy gravity.	1.55	5½/6
Truck tire, light gravity..	1.40	6 /6¼
Miscellaneous		
Mechanical blends	1.60	4¼/4½

One Secret of OIL RESISTANCE In Rubber!

Use **LESS** Rubber–
Use **MORE** Fumonex

¶ Fumonex enables you to reduce the rubber content of your product because its ease of mixing permits high proportions to be incorporated in the rubber such as are required to assure oil resistance. ¶ Fumonex costs less than half as much as rubber.

Fumonex

BINNEY & SMITH CO.

Specialists in CARBON BLACKS, STEARIC ACID, IRON OXIDES, MINERAL RUBBER and Other Products for the Rubber Industry.

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NEW YORK, N. Y.

THE MAGIC LAMP . . . . YOUR PROTECTION FOR OVER 50 YEARS

COMPOUNDING INGREDIENTS

THE slackness prevailing in practically all divisions of the rubber trade has seriously reduced the demand for every variety of compounding material.

The most interesting feature of the market for rubber chemicals is the marked increase in the sales volume of special purpose antioxidants. When they were first offered to the rubber industry, each manufacturer selected a product based on laboratory tests and used it wherever an antioxidant was required. Now, however, choice is based on tests that reflect the conditions to which the article will be exposed in service. In consequence sales of special purpose antioxidants are increasing while those of standard antioxidants are declining.

ANTIOXIDANTS. Akroflex is the new name by which Hiflex B will be known henceforth. This change was made to avoid confusion with 2 other products of similar name and in no wise indicates any change in quality or effectiveness of the material.

CARBON BLACK. Since the middle of July the demand for carbon black has fallen off; shipments during August and September were at only moderate rate. This situation was in consequence of the heavy tire schedules in effect last spring, which resulted in large inventories of finished goods in the hands of manufacturers.

Consumer demand for carbon black is probable during the fourth quarter when tire stocks will have been drastically reduced. Market conditions are firm with no likelihood of a change in view at present.

Arrow brand Compact Granulized carbon black is a new form of carbon black dustless and free-flowing.

CLAY. The advance recently published of $1 per ton on rubber compounding clays to become effective October 1 has been deferred to November 1 because negotiations were not completed with the Code Authorities on the wage scale. With this information in hand most of the consumers are ordering shipments sufficient to meet their requirements for the remainder of the year.

FACTICE. Owing to the drought in the West the prices of all domestic oils have rapidly advanced. This rise will be reflected later on in increase of prices for factice and rubber substitutes.

LITHARGE. A slight decline in price occurred early in September due to a drop in pig lead.

TITANIUM PIGMENTS. A brisk upturn is noted in demand on the part of manufacturers of white and light tinted goods. Withdrawals against contracts are brisk and in some cases in excess of productive capacity. Prices continue firm, with no changes anticipated over the remainder of the year despite the demand and the increased cost imposed upon manufacturers by the provisions of the NRA.

ZINC OXIDE. Improvement in demand evident the latter part of August on the part of the rubber trade did not further increase during September. Prices, however, are firm.

New York Quotations

September 25, 1934

Prices Not Reported Will Be Supplied on Application

Abrasives		
Pumicestone, powdered	lb.	$0.01¾ / $0.03½
Rottenstone, domestic	lb.	.02½ / .05
English	ton	
Silica, 15	ton	
Tripoli	lb.	.02¼ / .03
Accelerators, Inorganic		
Lead, white, dry (bbls.)	lb.	.06½
Lime, hydrated	ton	20.00
Litharge (commercial)	lb.	.06½
Magnesia, calcined, heavy	lb.	.04
carbonate	lb.	.06½ / .07
Accelerators, Organic		
A-1 (Thiocarbanilid)	lb.	.21 / .25
A-5-10	lb.	.33 / .36
A-7	lb.	.53 / .65
A-11	lb.	.60 / .75
A-16	lb.	.55 / .65
A-19	lb.	.56 / .75
A-32	lb.	.70 / .80
Accelerator 49	lb.	.40 / .50
Acrin	lb.	
Aldehyde ammonia	lb.	
Altax	lb.	
Anhydroformaldehyde-para-toluidine	lb.	
Barak	lb.	
Beutene	lb.	
C.P.B.	lb.	
Captax	lb.	
Crylene	lb.	
D.B.A.	lb.	
D.B.X.	lb.	
Di-Esterex	lb.	
Di-Esterex-N	lb.	
DOTG	lb.	.46 / .56
DPG	lb.	.35 / .45
du Pont 808	lb.	
833	lb.	
Esterex	lb.	
Ethylidine aniline	lb.	
Formaldehyde P.A.C.	lb.	
Guantal	lb.	.42 / .51
Hepteen Base	lb.	
Hexamethylenetetramine	lb.	
Lead oleate, No. 999	lb.	.10
Witco	lb.	.11
Lithex	lb.	
Monex	lb.	
Novex	lb.	
Pipsol X	lb.	3.55 / 4.00
Plastone	lb.	
R-2	lb.	1.55 / 1.90
base	lb.	4.55 / 5.00
R & H 40	lb.	
50-D	lb.	
Safex	lb.	
Super-sulphur No. 1	lb.	
No. 2	lb.	
Tetrone A	lb.	
Thio	lb.	
Thionex	lb.	
Trimene Base	lb.	
Triphenyl guanidine (TPG)	lb.	
Tuads	lb.	
Ureka	lb.	$0.62 / $1.00
B	lb.	
C	lb.	.58 / .69
Vulcanex	lb.	
Vulcanol	lb.	
Vulcone	lb.	
Z.B.X.	lb.	
Z-88-P	lb.	.48 / .60
Zimate	lb.	
Acids		
Acetic 28% (bbls.)	100 lbs.	2.66 / 2.91
glacial (carboys)	100 lbs.	14.00
Sulphuric, 66°	ton	15.50
Age Resisters		
Age-Rite Gel	lb.	
HP	lb.	
powder	lb.	
resin	lb.	
white	lb.	
Akroflex	lb.	
Albasan	lb.	
Antox	lb.	
B.L.E.	lb.	
Flectol A	lb.	
B	lb.	
H	lb.	
White	lb.	
M.U.F.	lb.	
Neozone	lb.	
Oxynone	lb.	
Parazone	lb.	
Permalux	lb.	
Solux	lb.	
V.G.B.	lb.	
Zalba	lb.	
Alkalies		
Caustic soda, 50% liquid, Columbia	100 lbs.	2.25
70%	100 lbs.	2.30
solid	100 lbs.	2.60 / 3.50
Antiscorch Materials		
Retarder-W	lb.	
R. H. Cumar	lb.	$0.075 / $0.085
U.T.B.	lb.	
Antisun Materials		
Heliozone	lb.	
Sunproof	lb.	
Binders, Fibrous		
Asbestos	ton	30.00
Brake Lining Saturants		
B. R. C. No. 553	lb.	.015 / .017
B. R. T. No. 3	lb.	.015 / .017
Colors		
BLACK		
Bone	lb.	.05½ / .15½
Lampblack (commercial)	lb.	.07 / .12
BLUE		
Brilliant	lb.	
Prussian	lb.	.35½
Toners	lb.	.80 / 3.50
Ultramarine, dry	lb.	.10
BROWN		
Mapico	lb.	.13
Sienna, Italian, raw (Quality Group No. 1)	lb.	.12½
GREEN		
Brilliant	lb.	
Chrome, light	lb.	.20
medium	lb.	.20
oxide (delivered)	lb.	.21½
Dark	lb.	
Guignet's	lb.	.70
Light	lb.	
Toners	lb.	.85 / 3.50
ORANGE		
Lake	lb.	
Toners	lb.	.40 / 1.60
ORCHID		
Toners	lb.	1.50 / 2.00
PINK		
Toners	lb.	1.50 / 4.00
PURPLE		
Permanent	lb.	
Toners	lb.	.60 / 2.00
RED		
Antimony		
Crimson, R. M. P. No. 3	lb.	.46
Sulphur free	lb.	.48
7-A	lb.	.33
Sulphuret, crimson, sulphur free	lb.	.50
golden 15/17%	lb.	.21 / .23

Z-2	lb.	$0.20	
Cadmium	lb.	.75	/$0.80
Chinese	lb.		
Crimson	lb.		
Iron Oxides			
Rub-Er-Red	lb.	.09¼	
Mapico	lb.	.09¼	
Medium	lb.		
Scarlet	lb.		
Toners	lb.	.80	/ 2.00
WHITE			
Lithopone (bags)	lb.	.04½/	.04¾
Albalith Black Label-11	lb.	.04½/	.04¾
Astrolith (5-ton lots)	lb.	.04½/	.04¾
Azolith	lb.	.04½/	.04¾
Cryptone-19	lb.	.06 /	.06¼
CB-21	lb.	.06 /	.06¼
Sunolith (5-ton lots)	lb.	.04½/	.04¾
XX-20 Zinc Sulphide	lb.	.10½/	.10¾
86	lb.	.10½/	.10¾
Rayox	lb.		
Titanolith (5-ton lots)	lb.	.06½/	.06¾
Titanox-A	lb.	.17 /	.18¾
B	lb.	.06 /	.06¼
C	lb.	.06 /	.06½
Zinc Oxide			
Azo 35 (35% leaded)	lb.	.05¾/	.06
Z (10% leaded)	lb.	.06¼/	.06½
ZZ (3-5% leaded)	lb.	.06¼/	.06½
ZZZ (lead free)	lb.	.06½/	.06¾
Black label (lead free)	lb.	.06½	
Ceramatone	lb.	.06½/	.06¾
F. P. Florence, Green Seal-8	lb.	.09⅜/	.09⅝
Red Seal-9	lb.	.08⅜/	.08⅝
White Seal-7 (bbls.)	lb.	.10⅝	
Green label (lead free)	lb.	.06½	
seal, Anaconda	lb.	.09⅜/	.09⅝
Horsehead (lead free) brand			
Special-3	lb.	.06½/	.06¾
XX Red-4	lb.	.06½/	.06¾
72	lb.	.06½/	.06¾
78	lb.	.06½/	.06¾
103	lb.	.06½/	.06¾
Kadox Black Label-15	lb.	.09⅜/	.09⅝
Blue Label-16	lb.	.08⅜/	.08⅝
Red Label-17	lb.	.07 /	.07¼
Lead free, all grades Anaconda	lb.	.06½/	.06¾
Leaded, 5%, Anaconda	lb.	.06¼/	.06½
35%, Anaconda	lb.	.05¾/	.06
Red label (lead free)	lb.	.06½	
seal, Anaconda	lb.	.08⅜/	.08⅝
U.S.P. (bbls.)	lb.	.12¾	
U.S.P. X (bbls.)	lb.	.12½	
White seal, Anaconda	lb.	.10⅝	
YELLOW			
Cadmium	lb.	.40 /	.45
Lemon	lb.		
Mapico	lb.	.09½	
Ocher, domestic (Quality Group A)	lb.	.02¾	
Toners	lb.	2.50	

Dispersing Agents

Bardex	lb.	.023 /	.025
Bardol	lb.	.021 /	.023
Darvan	lb.		

Factice—See Rubber Substitutes

Fillers, Inert

Asbestine	ton	15.00	
Barytes, c.l.	ton	22.20	
f.o.b. St. Louis	ton	23.00	
off color, domestic	ton	22.50	/25.00
white, imported	ton	32.50	/35.00
Blanc fixe, dry precip.	ton	70.00	/75.00
pulp, 66⅔%	ton	42.50	
Calcene	100 lbs.	1.75	/ 2.15
Infusorial earth	lb.	.03	/ .05
Kalite No. 1	ton		
No. 3	ton		
Suprex, white, extra light	ton	60.00	/75.00
heavy	ton	45.00	/60.00
Whiting			
Chalk precipitated	lb.	.04¼/	.04¾
Columbia brand	ton	8.00	/13.00
Domestic	ton		
Hakuenka	lb.		
Paris white, English cliff-stone	100 lbs.		
Sussex	ton		
Witco	ton	15.00	
Wood flour (f.o.b. New Hampshire)	ton	21.00	/55.00

Fillers for Pliability

Flex	lb.		
Fumonex, c.l., f.o.b. works, bags	lb.	.03	
l.c.l., f.o.b. warehouse	lb.	.05½/	.07
P-33	lb.		
Thermax	lb.		
Velvetex	lb.		

Finishes

IVCO lacquer, clear	gal.	2.60	/ 2.90
colors	gal.	2.70	/ 3.35
Rubber lacquer, clear	gal.		
Colored	gal.		
No. 106	gal.	3.00	
Starch, corn, pwd.	100 lbs.	3.56	/ 3.76
potato	lb.	.05¼/	.06
Talc, dusting	ton	20.00	
Pyrax	ton		

Flock

Cotton flock, dark	lb.	$0.10½/	$0.13
dyed	lb.	.50 /	.85
white	lb.	.14 /	.20
Rayon flock, colored	lb.	1.60	/ 1.75
white	lb.	1.40	

Latex Compounding Ingredients

Accelerator 552	lb.		
Aquarex	lb.		
Aresco	lb.	.28 /	.40
Casein, domestic	lb.	.12 /	.12½
Catalpo	ton		
Colloidal color pastes	lb.		
sulphur	lb.		
zinc oxide	lb.		
Disinfectants	lb.		
Dispersaid	lb.	1.50	
Dispersed Antox	lb.		
factice compound	lb.	.30	
Emo, brown	lb.	.12	
white	lb.	.12	
Emulsified Heliozone	lb.		
Fac-Cel B	lb.	.13	
C	lb.	.13	
Igepon A	lb.		
Nekal BX (dry)	lb.		
Neozone L	lb.		
Palmol	lb.	.095	
Tepidone	lb.		
Vulcan colors	lb.		

Mineral Rubber

B. R. C. No. 20	lb.	.014 /	.016
Black Diamond	ton	27.00	
Genasco Hydrocarbon, granulated, (fact'y)	ton	35.00	/37.00
solid	ton	25.00	/27.00
Gilsonite Hydrocarbon (factory)	ton		
Hydrocarbon hard	ton		
soft	ton		
Parmr Grade 1	ton	23.00	
Grade 2	ton	23.00	
265°	ton		

Mold Lubricants

Aquarex D	lb.		
Rusco mold paste	lb.	.12 /	.30
Sericite	ton	65.00	
Soapbark (cut)	lb.	.11 /	.12
Soapstone	ton	15.00	/25.00

Oils

Castor, blown	lb.	.11½/	.11¾
Poppyseed (bbls.)	gal.		
Rapeseed, refined (bbls.)	gal.	.39½/	.40½

Reclaiming Oils

B. R. V.	lb.	.039 /	.041
S. R. O.	lb.	.012 /	.014

Reenforcers

Carbon Black			
Aerfloted Arrow Specification Black	lb.	.0535/	.0825
Arrow Compact Black	lb.		
Granulized Carbon Black	lb.		
Century (delivered)	lb.	.0445/	.0535
"Certified" Cabot	lb.		
Spheron	lb.		
Disperso (delivered)	lb.	.0445/	.0535
Dixie, c.l., f.o.b., New Orleans, La.; Galveston or Houston, Tex.	lb.	.0445	
local stock, delivered	lb.	.07 /	.08¼
Gastex	lb.	.03 /	.07
Kosmos, c.l., f.o.b., New Orleans, La.; Galveston or Houston, Tex.	lb.	.0445	
local stock, delivered	lb.	.07 /	.08¼
Micronex	lb.	.0535	
Beads	lb.		
Ordinary (compressed or uncompressed)	lb.	.0535	
Carbonex	lb.	.030 /	.0375
S	lb.	.0315/	.040
Clays			
Aerfloted Paragon	ton	7.50	/10.00
Suprex, No. 1, selected	ton	10.00	
No. 2, standard	ton	7.50	
Blue Ridge, dark	ton		
China	ton		
Dixie	ton		
McNamee	ton		
Par	ton		
Standard	ton		
Witco Perfection	ton	8.50	
Cumar EX	lb.	.0275/	.0375

Reodorants

Amora A	lb.		
B	lb.		
C	lb.		
D	lb.		
Para-Dors	lb.		
Rodo No. 0	lb.		
No. 10	lb.		

Rubber Substitutes or Factice

Amberex	lb.	.13¾	
Black	lb.	.06 /	.08½
Brown	lb.	.07¼/	.11½
Duphax A	lb.		
B	lb.		
White	lb.	.07½/	.12

Softeners

B. R. C. No. 555	lb.	$0.012	/$0.014
B. R. T. No. 7	lb.	.015 /	.017
Burgundy pitch	lb.	.04 /	.05
(net weight)	lb.	.06¼/	.08
Corn oil, crude (bbls.)	lb.	.07	
Cycline oil	gal.	.15 /	.28
Fluxol	ton		
Genasco liquid asphalt	gal.		
Hardwood pitch, c.l.	ton	23.50	/25.00
Palm oil (Witco)	lb.	.05	
Petrolatum, light amber	lb.	.04⅛	
Pigmentar (drums)	gal.	.23 /	.25
Pigmentaroil (drums)	gal.	.23 /	.25
Pine oil, dest. distilled (drums)	gal.	.44 /	.48
pitch	lb.	.04 /	.05
tar, specification retort (drums)	gal.	.23 /	.29
Plastogen	lb.		
Rosin oil, compounded	gal.	.34 /	.40
Rubtack	lb.	.10	
Sperso	lb.		
Tackol	lb.	.085 /	.18
Tonox	lb.		
Witco No. 20	gal.	.15	

Softeners for Hard Rubber Compounding

RSL Resin	lb.		
Resin C-55°	lb.	.0125/	.0145
70°	lb.	.0125/	.0145
85°	lb.	.0125/	.0145

Solvents

Benzol 90% (drums)	gal.	.27	
Bondogen	gal.		
Carbon bisulphide (drums)	lb.	.05¼/	.07½
tetrachloride	lb.	.05¼	
Dipentene, commercial	gal.	.34 /	.44
Rubber (f.o.b. Group 3 refineries)	gal.		
Toluol	gal.	.38	
Turpentine, steam distilled	gal.	.44	
wood, dest. distilled (drums)	gal.	.40	

Stabilizers for Cure

Laurex, ton lots	lb.		
Stearex B	lb.	.08 /	.09½
Beads	lb.	.08 /	.12
Stearic acid, dbl. pres'd	lb.	.09 /	.14
single pressed	lb.	.08½/	.13
Zinc stearate	lb.	.20 /	.25

Synthetic Rubber

DuPrene	lb.	1.00	

Tackifier

B. R. H. No. 2	lb.	.015 /	.017

Varnish

Shoe	gal.	1.80	

Vulcanizing Ingredients

Sulphur			
Chloride, drums	lb.	.03½/	.04
Flowers, extrafine refined, U.S.P.	100 lbs.		
Rubber	100 lbs.	2.05	/ 2.80
Telloy	lb.		
Vandex	lb.		

(See also Colors—Antimony)

Waxes

Carnauba, No. 3 chalky	lb.	.20 /	.21
2 N.C.	lb.		
3 N.C.	lb.	.22 /	.23
1 Yellow	lb.	.35 /	.36
2	lb.	.34 /	.35
Montan, crude	lb.	.10¾/	.11
Paraffine (128/130) refined	lb.	.06½	

Alloprene

Alloprene, a new chlorinated rubber product, is the first solid material of its kind to be manufactured in England. It is a white, fibrous material containing from 65 to 66% of chlorine and having a composition corresponding to $C_{10}H_{13}Cl_{11}$. It is remarkably resistant to attack by acids and alkalis at ordinary or higher temperatures and is equally resistant to aqueous solutions of oxidizing agents such as permanganate or the hypochlorites and bichromates. It can also be safely used in contact with such corrosive gases as oxygen, chlorine, and sulphur dioxide. Like many other chlorinated products, Alloprene is non-inflammable. In prolonged contact with a flame it carbonizes without burning or fusing. Its properties qualify Alloprene for use as the base for special service paints, as a thermal insulator, and as a non-conductor of electricity. Also being thermoplastic under certain conditions, it may be molded into sheets, blocks, etc.

COTTON AND FABRICS

FOLLOWING reports that workers were gradually abandoning the strike to go back to the mills, came the acceptance by the Textile Union of the terms of settlement proposed by the President's special committee, and the call to 420,000 workers to go back to their looms on September 24. This move concluded what many considered an abortive attempt by the union to strengthen its organization under Section 7a of the NRA code at the expense of manufacturers.

Cotton prices lost much ground in September before the strike was settled. The government estimate of 9,252,000 bales was unexpectedly higher than the previous report due to an increased crop in the drought sections because of late rains. The decision to retain the Bankhead Act was also a disappointment, but indications are that in the next session of Congress the matter will be taken up again.

As the effects of the government's efforts to help the cotton farmer become evident, many observers conclude it is not wholly an unmixed blessing. The sharp drop in our exports has given many traders concern as to our ability to hold first place in foreign markets. In Liverpool a movement is under way to permit delivery of foreign as well as American growths on contracts. The reason given is the small American crop and the increased prices due to government lending policies.

Week ended September 1. A week of conferences by the National Labor Relations Board failed to settle the textile strike; so at 11:30 p.m. September 1, a strike call was issued by the United Textile Workers of America, backed by the American Federation of Labor, for a walk-out affecting 1,000,000 workers in the cotton, silk, and wool industries. With the threat of the strike hanging over the cotton market all week, prices moved in a narrow range on both sides of the market, to end the week with losses of from 4 to 20 points. Hedge selling against the new crop was heavy; the weather report showed further losses in central Texas, too much rain in the Mississippi Valley, and uncertainty over recent rains in Oklahoma. The market derived some strength from reports that employes of a number of mills in the South refused to strike.

On Friday night the October position was 13.16¢, compared with 13.21¢ the previous Saturday; December 13.28 against 13.38; January 13.32 against 13.40; March 13.32 against 13.48; May 13.38 against 13.57; and July 13.45 against 13.65.

Labor unions received further support by decision of the National Labor Relations Board in a decision on the Houde Engineering Corp. case. The Board's interpretation of Section 7a of the National Recovery Act was that when a majority of workers chose representatives, companies must deal with them. This reverses decisions by General Johnson and Donald R. Richberg, through which each individual and minority group had to be treated with collectively.

An editorial in the *Herald Tribune* of New York stated, "The cotton textile strike, for which union leaders have been making as conspicuous preparations as possible since the strike resolution was adopted by the United Textile Workers' convention here in the middle of August, is no more inevitable or unavoidable than was that which was threatened but called off in June . . . the published discussions of the recent union convention here indicate clearly enough that the real objective is not the betterment of the worker at the employer's expense but the concession by the present Administration of more power to labor in the government of industry through the NRA."

Week ended September 8. The textile strike, which gained momentum over last week-end and the Labor Day holiday, sent the market down 12 to 17 points when it reopened Tuesday, but a drop in hedging and hopes that the strike would be settled sent prices up again Wednesday. From then on the market evened up in anticipation of the government crop report, issued after the close on Saturday. The estimate showed a gain over the last report; while private estimates expected a smaller crop. The Chicago market was the only one to reopen, and prices lost about $1 a bale. On the New York Exchange prices were from 3 points lower to 3 points higher for the week.

October closed at 13.15¢, compared with 13.16¢ last Saturday; December 13.27 against 13.28; January 13.31 against 13.32; March 13.36 against 13.32; May 13.43 against 13.38; and July 13.48 against 13.45.

The Department of Agriculture put the crop at 9,252,000 bales, based on September 1 conditions; this figure was 57,000 higher than the August 1 report and 86,000 bales above the average of 8 private estimates. The indicated yield per acre was 162.6 pounds and makes a crop 3,795,000 less than last year and 5,414,000 less than the 1928-32 average.

"During August," said the report, "the prospects improved in all States from Alabama east because of the generally favorable weather conditions which obtained there during the greater part of the month. These increases are partly offset by decreases in the States west of Alabama. In Texas the production forecast is practically the same as was reported a month ago. Arkansas and Oklahoma show sharp declines because of further damage from drought during the first 3 weeks of August. The yield of 80 pounds per acre forecast for Oklahoma is the lowest on record for that State. On the other hand, the 325 pounds per acre forecast for North Carolina is one of the highest ever made there."

The first week of the textile strike was marked by violence caused by mass picketing. Some 6 to 8 men were killed, and scores shot. Many mills opened their doors, but as the strike progressed and picketing increased, the number of strikers increased. Workers in allied trades joined the strike, and Francis J. Gorman predicted that upholstery and drapery workers would be added to the ranks in the second week.

Week ended September 15. The textile strike, the increased crop estimate, and heavy hedge selling sent all positions below 13¢ for losses of 44 to 54 points. The only support of the market came on news that many mills were reopening, and a statement by General Johnson that the Textile Union was responsible for the strike to a large degree because of the alleged abrogation of an agreement made with him on June 2. In a denial of the charge Mr. Gorman demanded the resignation of General Johnson from the NRA. He stated that a report on hours was made as agreed, a report on wages was 2 weeks late, and a report on differentials was never made.

Mr. Sloan praised the General for scotching rumors that the government was aiding the strikers; Thomas F. McMahon, president of the Union, and Norman Thomas, criticized his actions. Meanwhile silk mills moved for a settlement of the strike; several locals in the strike voted to return to work; troops were keeping strict guard at Rhode Island where federal troops were on the verge of being called; and 10,000 soldiers stood by for trouble in various sections of the South when mills attempt to reopen next Monday.

Under these factors October closed at 12.71¢, against 13.15¢ last week; December 12.81 against 13.27; January 12.84 against 13.31; March 12.91 against 13.36; May 12.95 against 13.43; and July 12.97 against 13.48.

August consumption of cotton was 420,949 bales, against 588,902 in the same month last year, according to the Census Bureau. Exports were 267,562 bales against 530,627; for the year ended July 1, exports were approximately 800,000 bales less than the previous season, and so far this season, exports are 400,000 bales short of last year.

An editorial of the *Herald Tribune*, headed "Cotton Exports," reads that "Under the regime of the late lamented Federal Farm Board we witnessed a demonstration of what price fixing could do to the export market for wheat.

It begins to look as though, that unfortunate lesson having been ignored by the present Administration, we are now to have a similar demonstration in the field of cotton under the auspices of the A. A. A."

Going on to point out the statistics mentioned above and the fact that foreign buyers are taking cotton from every country but the United States, the writer concludes by saying: "What does all this come down to? It seems to us it comes down to this: Our government by agreeing to 'lend' on cotton in the amount of 12¢ a pound has virtually guaranteed a market at that level. If present tendencies persist, not only shall we have reduced our production by some 4,000,000 bales, thus disorganizing the entire economy of the South, but we shall have done so without affecting the surplus. At the end of the experiment we may merely find that what has happened is that the taxpayer has taken over the surplus from the cotton grower and that we have lost, perhaps permanently, a large part of our foreign market."

On September 15 the Agricultural Adjustment Administration announced that plans were being made to distribute $72,500,000 among cotton growers next month for "parity" and rental payments due in December. A total of $41,061,775 has already been paid.

Week ended September 22. The Textile Union ended its strike September 23 in response to President Roosevelt's request and the findings of the special board he had appointed to study the situation. This action had been foreshadowed during the week, and prices responded moderately. But on Saturday heavy liquidation of the October position in advance of notice day on Tuesday sent the market down 13 to 16 points, although the week's changes, on the up side, showed gains of from 4 to 9 points over last Saturday.

The October position closed at 12.62¢, compared with 12.71¢ a week ago; December 12.75 against 12.81; January 12.79 against 12.84; March 12.86 against 12.91; May 12.91 against 12.95; and July 12.93 against 12.97.

The Census Bureau reported that in August the cotton spinning industry operated at 76.8% of capacity, compared with 74.3% in July and 106.7% in August, 1933.

Another report worrying cotton traders reveals that foreign growths this year are expected to total 13,646,000 bales, or 4,394,000 more than the 9,252,000 bales estimated for our crop. The import of this condition is that the United States is liable to lose her supremacy in world markets—exports so far this season from the United States are 537,510 bales, compared with 1,085,495 last year. This time is the first since the Civil War that foreign growths have exceeded ours. The report also shows that in the years of the Farm Board's activities consumption of domestic cotton in world markets decreased, and in the years that the Farm Board did not operate consumption of domestic cotton increased and foreign decreased.

In 1929-1930 the Farm Board announced loans of 16¼¢ on cotton. Consumption of our cotton decreased to 13,046,000 bales; foreign consumption increased to 11,141,000 bales. In 1930-1931, another Farm Board year, consumption of domestic cotton decreased to 11,141,000 bales; consumption of foreign cotton increased to 11,216,000 bales. In 1931-1932 the Farm Board did not operate, and with 6¢ cotton, takings of our cotton increased to 12,568,000 bales while that of foreign growths dropped to 10,501,000 bales. In 1932-1933 the figures were 14,435,000 bales and 10,367,000 bales. So that with unrestricted markets and world prices our exports were larger than those of foreign countries, but with fixed prices and government intervention our exports dropped. The decrease in our exports this year, due to price fixing, is already evident.

WEEKLY AVERAGE PRICES OF MIDDLING COTTON

Week Ended	Cents per Pound
Sept. 1	13.31
Sept. 8	13.32
Sept. 15	13.13
Sept. 22	12.92

New York Quotations

September 25, 1934

Drills		
38-inch 2.00-yard	yd.	$0.16
40-inch 3.47-yard		.09⅝
50-inch 1.52-yard		.21¼
52-inch 1.85-yard		.18⅛
Ducks		
38-inch 2.00-yard D. F.	yd.	.16½
40-inch 1.45-yard S. F.		.22⅝
72-inch 1.05-yard D. F.		.32
72-inch 17.21-ounce		.35½
MECHANICALS		
Hose and belting	lb.	.35
TENNIS		
52-inch 1.35-yard	yd.	.24⅞
***Hollands**		
GOLD SEAL		
30-inch No. 72	yd.	.19½
40-inch No. 72		.21½
RED SEAL		
30-inch	yd.	.17
40-inch		.18½
50-inch		.24½
Osnaburgs		
40-inch 2.34-yard	yd.	.14½
40-inch 3.00-yard		.10⅞
40-inch 10-ounce part waste		.16⅝
37-inch 2.42-yard		.13½
Raincoat Fabrics		
COTTON		
Bombazine 60 x 64	yd.	.11
Plaids 60 x 48		.10¾
Surface prints 60 x 64		.12¾
Print cloth, 38½-inch, 60 x 64		.07½
SHEETINGS, 40-INCH		
48 x 48, 2.50-yard	yd.	.12
64 x 68, 3.15-yard		.11
56 x 60, 3.60-yard		.09⅜
44 x 48, 3.75-yard		.07¾
SHEETINGS, 36-INCH		
48 x 48, 5.00-yard	yd.	.06½
44 x 40, 6.15-yard		.05½
Tire Fabrics		
BUILDER		
17¼ ounce 60" 23/11 ply Karded peeler	lb.	.41
CHAFER		
14 ounce 60" 20/8 ply Karded peeler	lb.	.41
9¼ ounce 60" 10/2 ply Karded peeler	lb.	.41
CORD FABRICS		
23/5/3 Karded peeler, 1 7/32" cotton	lb.	.41
15/3/3 Karded peeler, 1 7/32" cotton	lb.	.39
23/5/3 Karded peeler, 1¼" cotton	lb.	.48
23/5/3 Combed Egyptian	lb.	.55
LENO BREAKER		
8¼ ounce and 10¼ ounce 60" Karded peeler	lb.	.36

*Prices for 1,200 yards of a width or over.

Tire Fabrics

BUILDER. 17¼ ounce 60" 23/11 ply Karded peeler ..... lb. .41

CHAFER. 14 ounce 60" 20/8 ply Karded peeler ..... lb. .41

9¼ ounce 60" 10/2 ply Karded peeler ..... lb. .41

CORD FABRICS. 23/5/3 Karded peeler, 1 7/32" cotton .. lb. .41

15/3/3 Karded peeler, 1 7/32" cotton .. lb. .39

23/5/3 Karded peeler, 1¼" cotton .. lb. .48

23/5/3 Combed Egyptian ..... lb. .55

LENO BREAKER. 8¼ ounce and 10¼ ounce 60" Karded peeler ..... lb. .36

*Prices for 1,200 yards of a width or over.

September 24 cotton prices in New York declined 6 to 9 points. The New York market for spot cotton was quiet, 12.8¢ for middling upland.

The next day after the circulation of notices for over 30,000 bales depressed the market, prices on the Cotton Exchange recovered sharply $1 a bale and ended unchanged to 4 points higher than on Monday. A favorable factor was the opening of mills shut down during the late strike. Closing prices follow: October 12.54¢; December 12.68; January 12.72; March 12.80; May 12.86; and July 12.87.

Cotton Fabrics

DUCKS, DRILLS, AND OSNABURGS. The 2 major factors that have borne sharply on the cotton fabric market are the issuance of the Government Census Bureau report on the size of the current cotton crop, and the strike of the textile workers affecting about 50% of cotton goods manufacturing plants. The crop report was moderately bearish in contrast to the private report of the size of the crop dating 10 days previous. The facts reported constitute a strong cotton position. The market has declined 1¢ a pound since the high of August, but has not thus far been reflected in the prices of finished fabrics because of the general interruption to cotton mill operation and curtailed supply.

The strike of textile workers continues to influence both production and distribution. The prospects of its early settlement are reassuring to rubber plants that their supplies of fabrics will not be too seriously curtailed. Present conditions indicate a better situation later as to the fabric markets through an ultimately better balance between demand and production.

RAINCOAT FABRICS. Owing to recent rains the raincoat business has been very good, both with manufacturers and retailers. All types of raincoats are being bought. The most popular style is a printed tweed with a bright plaid lining.

SHEETINGS. There has been very little activity in the gray goods market in the past few weeks. Prices, due to the strike situation, moved up slightly and are decidedly firm at current levels.

TIRE FABRICS. Demand is moderate and seasonal. Prices are nominal, steady, and unchanged.

THE BASIC 1934 QUOTA FOR SARAWAK is 24,000 tons and for 1935 is 28,000 tons. It is estimated that at the end of 1933 there were 101,709 acres of mature rubber and 163,203 acres immature, most of which is near maturity. In 1935 it is probable that 250,000 acres of rubber will be tappable. On an average yield of only 300 pounds an acre, the 1935 potential output would be over 33,000 tons against the basic quota of 28,000 tons.

Tire Molds

Fifteen years of specialized experience in the machining of tire molds enables us to supply your needs at minimum prices and in a minimum amount of time. This same experience enables us to produce work that is unfailingly accurate. You will find it to your advantage to consult us.

Akron Equipment Co.
Akron
Ohio

Regular and Special Constructions
of
COTTON FABRICS

Single Filling Double Filling
and
ARMY
Ducks

HOSE and BELTING
Ducks

Drills

Selected
Osnaburgs

Curran & Barry
320 BROADWAY
NEW YORK

CRUDE RUBBER

(*Continued from page* 68)

ket. Prices sold off from 20 to 25 points on Wednesday when cheap shipment offers from the East were received and declines recorded at London and Singapore. The market recovered, however, especially toward the end of the session when the President requested settlement of the textile strike after receiving a report of the Textile Mediation Board he appointed to study the problem, and at the close prices were from 2 to 13 points above those of last Saturday.

September closed at 15.33¢, compared with 15.20¢ a week ago; October 15.39 against 15.29; December 15.64 against 15.54; January 15.75 against 15.66; March 16.05 against 15.92; May 16.28 against 16.21; and July 16.50 against 16.48.

August consumption was 33,310 long tons, against 32,647 in July and 44,428 in August, 1933; imports were 33,248 long tons, against 41,530 in July, and 44,802 in August, 1933; domestic stocks at the month-end were 362,647, against 364,883 on July 31. Crude rubber afloat for the United States on August 31 was 40,278 long tons, against 45,869 on July 31 and 53,084 on August 31, 1933. The drop in imports and rubber afloat was especially pleasing to traders, indicating that the restriction scheme is beginning to have the desired effect. The statistics were released by The Rubber Manufacturers Association.

The same organization reported that July shipments of pneumatic casings were 4,157,411, a 20.5% drop from June and 24.4% from July, 1933; production was 3,352,836 casings, a drop of 22.8% and 41.3% respectively; and casings on hand were 9,436,816, 7.7% under those a month before, but 37.9% above those of a year ago.

Cable dispatches for the week were as follows. From Batavia came a report that the export duty adopted by the People's Council on August 24 to apply to estate rubber had not been passed by the Dutch East Indies government; a Reuter's message said that the monthly meeting of the International Rubber Regulation Committee is to be held about September 25; Symington & Wilson, in referring to Siam's defection from the restriction agreement, expressed the opinion that the original quota of 15,000 tons had appeared adequate to the framers of the restriction scheme, but that higher prices had brought out more rubber than expected. The question will probably be settled at the coming meeting, according to the firm, which added that "The manner in which the market withstood the news proves that at the moment there is no unwieldy or weak outside speculation." Another point to consider in reference to Siam is that, although its total production is small, its proximity to Malaya offers an outlet for smuggling unless it is bound by the general agreement.

In the Outside Market business was much better. Orders for September as well as forward shipments were received, especially on the decline. But a good volume followed the market upward.

September ribbed smoked sheets were 15⅜¢ against 15¼¢; October-December 15⅝ against 15⅜; January-March 16.00 against 15¾; and April-June 16⅜ against 16⅛.

On September 24 futures opened steady at 6 to 14 points advance and closed dull with 4 points advance to 3 points decline from the closing prices of September 22. Sales totaled 1,750 tons. Spot ribbed smoked sheets closed at 15.35¢ nominal; October 15.36; November 15.40; and December 15.63.

On September 25 the market was quiet and showed no particular trend. Futures were 18 points lower to 1 point higher at the close, with sales 2,200 tons. Spot ribbed smoked sheets were 15¼¢; October 15.34; December 15.54; January 15.67; March 15.93; May 16.16; and July 16.36.

Purchase of Compounding Materials

THE amount of stock which can be bought forward and held in the factory profitably, is a problem greatly affected by conditions at the time purchase is contemplated, but which nevertheless allows certain fundamental points to be considered. Thus hand-to-mouth purchases involve similar conditions with stocks, and whatever the decision reached regarding the main principles of purchase, there can be no doubt that it is very dangerous to work on too fine limits. In this matter the following considerations serve as safeguards against shortages of supplies.

All ingredients used in rubber compounding must be bought to specification and pass out on laboratory tests; such tests in the normal course of control may be simple, or complicated. If it is customary to test the materials in actual test rubber mixings, about 3 days are required for adequate test control. An aging period and subsequent tests may be advisable, requiring possibly 5 days for completion. This time can be taken as a basis for deciding the minimum purchase and stock allowable for a compound tested out in this manner. If the factory stock is 5 days when the next consignment is delivered, then if you assume the quality is satisfactory, the finest possible limits of stock have been held. As additional precaution all stocks should be such as to allow for the possibility of any material being rejected once, and this plan requires twice the testing time plus the time normally taken to secure a fresh supply.

Although the method of rapid purchase in small quantities involves more work, both in booking and testing, it also insures that the materials in use have not to be written off at any time to meet a falling market, and business can be based upon actual purchase prices.

RUBBER SCRAP

SEPTEMBER demand for scrap fell off somewhat owing to the textile strike and consequent possible shortage of fabrics required by the rubber industry. Scrap prices, however, held up well. Export trade in solid tires and inner tubes maintained good volume.

BOOTS AND SHOES. The general tone of the market is good, and demand steady.

INNER TUBES. A very steady demand prevails, with a tendency of the volume to increase. The price of No. 1 floating tubes advanced ½¢ because of limitation of the supply.

TIRES. The demand for tires is fair. The supply currently available is only moderate owing to the influence of freight rates on the low price prevailing, now 25¢ per ton lower than the quotation of one month ago.

SOLID TIRES. Sales of solid tire scrap continue chiefly for export, in which trade is active.

MECHANICALS. All grades of mechanical goods scrap are in steady demand at prices the same as quoted a month ago.

HARD RUBBER. Stocks of hard rubber scrap are scanty. The demand had caused a slight advance.

CONSUMERS' BUYING PRICES

(Carload Lots Delivered Eastern Mills)

September 25, 1934

		Prices
Boots and Shoes		
Boots and shoes, black	*lb.*	$0.01⅛/$0.01¼
Colored	*lb.*	.01 / .01⅛
Untrimmed arctics	*lb.*	.01 / .01⅛
Inner Tubes		
No. 1, floating	*lb.*	.07¼/ .07½
No. 2, compound	*lb.*	.03¾/ .04
Red	*lb.*	.02¾/ .02⅞
Mixed tubes	*lb.*	.03¼/ .03⅜
Tires (Akron District)		
Pneumatic Standard		
Mixed auto tires with beads	*ton*	9.50 / 9.75
Beadless	*ton*	16.00 /16.50
Auto tire carcass	*ton*	11.00 /12.00
Black auto peelings	*ton*	20.50 /21.00
Solid		
Clean mixed truck	*ton*	38.00 /40.00
Light gravity	*ton*	40.00 /42.00
Mechanicals		
Mixed black scrap	*lb.*	.01 / .01⅛
Hose, air brake	*ton*	15.00 /16.00
Garden, rubber covered	*ton*	13.00 /13.50
Steam and water, soft	*ton*	13.00 /13.50
No. 1 red	*lb.*	.01⅞/ .02
No. 2 red	*lb.*	.01⅝/ .01¼
White druggists' sundries	*lb.*	.02 / .02⅛
Mechanical	*lb.*	.01¼/ .01½
Hard Rubber		
No. 1 hard rubber	*lb.*	.10⅞/ .11½

Where purchase for immediate delivery is under consideration and also when deciding the amount of each delivery under contract, the essential controlling conditions are production requirements, storage capacity, and freight; on a common material the latter may render a larger consignment a profitable proposition. When a large purchase is dependent upon immediate delivery, however, it is only rarely worth while because of the storage occupied or rental to be paid, and there is also the added risk of deterioration in certain instances.

CLASSIFIED ADVERTISEMENTS

ALL CLASSIFIED ADVERTISING MUST BE PAID IN ADVANCE

GENERAL RATES	SITUATIONS WANTED RATES	SITUATIONS OPEN RATES
Light face type $1.00 per line (ten words)	Light face type 40c per line (ten words)	Light face type 75c per line (ten words)
Bold face type $1.25 per line (eight words)	Bold face type 55c per line (eight words)	Bold face type $1.00 per line (eight words)

Allow nine words for keyed address. *Replies forwarded without charge.*

SITUATIONS WANTED

POSITION ON PLANTATION OR ESTATE DESIRED BY COLlege graduate, at present and for past year engaged in industrial research on rubber. Age 21, single. Prefer upper Amazon region, but am willing to go anywhere at once. Address Box No. 420, care of INDIA RUBBER WORLD.

CHEMIST, B.SC., WITH FOURTEEN YEARS' EXPERIENCE. Accustomed to independent investigation. Thorough training in mill room work and process control. Competent analyst. Address Box No. 422, care of INDIA RUBBER WORLD.

EXECUTIVE POSITION BY SUPERINTENDENT, 22 years' experience in rubberizing all kinds of fabric, calendered and spread, for raincoat materials, hospital sheeting, and specialties of all kinds. Complete knowledge of compounds and cost system, successful in organizing and plant development. Address Box No. 423, care of INDIA RUBBER WORLD.

SITUATIONS OPEN

WANTED: MECHANICAL ENGINEER, TRAINED IN RUBBER industry; capable of acting as executive and superintendent of rubber plant. State references, experience, salary required, in first letter. Address Box No. 424, care of INDIA RUBBER WORLD.

GUTTA PERCHA MIXER WANTED. ONLY THOSE WITH EXperience on making backing cloth need apply. State full particulars. Address Box No. 425, care of INDIA RUBBER WORLD.

MISCELLANEOUS

PROFESSIONAL SERVICES
ENGINEERS • CONSULTANTS • CHEMISTS

ROYCE J. NOBLE, Ph.D.
Chemical Engineer *Latex Processes*
56 WILBUR STREET MALDEN, MASS.

V. L. SMITHERS, Inc.
Rubber Testing Laboratories
2706 FIRST CENTRAL TRUST BLDG. AKRON, O.

PAUL A. FRANK
RUBBER Products—Processes—Machinery
I finance and direct the development and promotion of inventions which relate to the rubber industry.
SECOND NATIONAL BLDG. AKRON, O.

PARTS
Rolls
Gears
Housings
Bearings
Steam Plates
Etc.

When Rubber Mill Machinery Is Required—Think of *ALBERT*

MISCELLANEOUS
Motors
Valves
Calender Shells
Instruments
Tube Mandrels
Etc.

Because Albert & Son are recognized as leaders among dealers who handle Rubber Mill Machinery and Equipment exclusively; buying, rebuilding, warehousing, and selling this line of equipment only. With undivided thought, interest and efforts we put in our entire time making used rubber machinery practical.

Albert & Son quality today is the logical result of the high ideals which have been maintained for forty-one years.

Remember Albert & Son when problems call for special requirements. With the tremendous stock of rubber mill machinery and equipment which we have, we are able to work in and build special equipment to take care of your particular needs.

Our prices are in line with the high quality of used equipment which we sell.

We are dismantling equipment at the following plants, augmenting our stock of every type of Rubber Mill Machinery:

MADISON TIRE & RUBBER CO.....Millersburg, O.
SUNBURY RUBBER CO.....Sunbury, Pa.
PREMIER RUBBER CO.....Kansas City, Mo.
U. S. COMPRESSION TUBE CO.....Tulsa, Okla.
A. J. STEPHEN CO.....Kansas City, Mo.
PHILA. LATEX PRODUCTS CO.....Philadelphia, Pa.
UNEXCELLED RECORD CO.....Plainfield, N. J.

REBUILT AND NEW RUBBER MILL MACHINERY OF EVERY TYPE
GUARANTEED EQUIPMENT—PROMPT SHIPMENT
FACTORY OUTFITTERS FROM A BOLT TO A COMPLETE PLANT
Engineering and Erecting Service

L. ALBERT & SON

Warehouses: **MAIN OFFICE—TRENTON, N. J.**
TRENTON, N. J.; AKRON, OHIO; COMPTON, CAL. *Cable Address:* Albertson, Trenton

WE CARRY THE LARGEST STOCK IN THE WORLD

(*Advertisements continued on page* 81)

Rubber Goods Production Statistics

		1934	1933
TIRES AND TUBES*		June	June
Pneumatic casings			
Production	thousands	4,212	4,880
Shipments, total	thousands	5,071	5,044
Domestic	thousands	4,956	4,320
Stocks, end of month	thousands	9,913	5,292
Solid and cushion tires			
Production	thousands	21	15
Shipments, total	thousands	19	15
Domestic	thousands	19	14
Stocks, end of month	thousands	31	20
Inner tubes			
Production	thousands	3,974	4,358
Shipments, total	thousands	5,150	4,622
Domestic	thousands	5,058	4,575
Stocks, end of month	thousands	8,532	4,878
Raw material consumed			
Fabrics	thous. of lbs.	7,810	19,553
MISCELLANEOUS PRODUCTS			
Rubber bands, shipments	thous. of lbs.	238	313
Rubber clothing, calendered			
Orders, net	no. of coats and sundries	....	11,756
Production	no. of coats and sundries	....	35,873
Rubber-proofed fabrics, production, total	thous. of yds.	3,156	6,139
Auto fabrics	thous. of yds.	478	603
Raincoat fabrics	thous. of yds.	1,320	3,195
Rubber flooring, shipments	thous. of sq. ft.	....	310
Rubber and canvas footwear			
Production, total	thous. of prs.	....	3,732
Tennis	thous. of prs.	....	2,153
Waterproof	thous. of prs.	....	1,579
Shipments, total	thous. of prs.	....	3,925
Tennis	thous. of prs.	....	3,085
Waterproof	thous. of prs.	....	840
Shipments, domestic, total	thous. of prs.	....	3,857
Tennis	thous. of prs.	....	3,025
Waterproof	thous. of prs.	....	833
Stocks, total, end of month	thous. of prs.	....	13,922
Tennis	thous. of prs.	....	4,485
Waterproof	thous. of prs.	....	9,437
Rubber heels			
Production	thous. of prs.	19,412	23,479
Shipments, total	thous. of prs.	20,513	27,717
Export	thous. of prs.	426	284
Repair trade	thous. of prs.	3,946	7,155
Shoe manufactures	thous. of prs.	16,142	20,278
Stocks, end of month	thous. of prs.	38,446	18,402
Rubber soles			
Production	thous. of prs.	4,772	6,094
Shipments, total	thous. of prs.	5,050	6,786
Export	thous. of prs.	10	5
Repair trade	thous. of prs.	241	395
Shoe manufactures	thous. of prs.	4,799	6,386
Stocks, end of month	thous. of prs.	4,955	2,228
Mechanical rubber goods, shipments			
Total	thous. of dollars	....	3,924
Belting	thous. of dollars	....	865
Hose	thous. of dollars	....	1,471
Other	thous. of dollars	....	1,588

*Data for 1934 are estimated to represent approximately 97% of the industry.

Source: *Survey of Current Business*, Bureau of Foreign & Domestic Commerce, Washington, D. C.

Low and High New York Spot Prices

	September		
PLANTATIONS	1934*	1933	1932
Thin latex crepe	16 /16¾	7¼/9⅛	4 /5⅛
Smoked sheet, No. 1 ribbed	15 7/16/15 7/8	6 5/8/8¼	3 7/16/4 1/16
PARAS			
Upriver fine	10¾/11¾	8¾/9¾	6½/7¾

*Figured to September 25, 1934. All prices in cents per pound.

World Rubber Shipments—Net Exports

	Long Tons—1934		
British Malaya	May	June	July
Gross exports	69,403	53,282	53,335
Imports	34,093	20,981	22,829
Net	35,310	32,301	30,506
Ceylon	8,870	5,397	3,818
India and Burma	1,106	1,425	710
Sarawak	1,892	1,886	1,662
British N. Borneo	1,397	644	1,048
Siam	997	1,497	2,399
Java and Madura	12,104	4,860	5,762
Sumatra E. Coast	16,720	6,078	7,408
Other N. E. Indies	34,710	15,216	14,182
French Indo-China	*1,408	*1,504	*1,703
Amazon Valley	726	765	....
Other America	7	10	....
Guayule	100	50	....
Africa	221	225	....
Totals	115,568	71,858	....

*Estimate. *Compiled by Leather-Rubber-Shoe Division, Department of Commerce, Washington, D. C.*

London Stocks, July, 1934

			Stocks, July 31		
LONDON	Landed Tons	Delivered Tons	1934 Tons	1933 Tons	1932 Tons
Plantation	9,141	4,342	50,438	41,132	48,798
Other grades	20	3	52	46	44
LIVERPOOL					
Plantation	*3,325	*1,939	*55,414	*58,681	*57,243
Total tons, London and Liverpool	12,486	6,284	105,904	99,859	106,085

*Official returns from the recognized public warehouses.

Imports by Customs Districts

	July, 1934 *Crude Rubber		July, 1933 *Crude Rubber	
	Pounds	Value	Pounds	Value
Massachusetts	6,215,131	$713,152	20,659,992	$865,601
New York	71,907,594	7,642,638	73,096,781	3,237,717
Philadelphia	1,281,155	132,736	2,075,058	73,502
Maryland	4,170,792	386,434	1,569,988	58,799
New Orleans	2,424,895	243,076	314,868	11,469
Los Angeles	9,058,389	882,655	3,535,116	126,929
San Francisco	345,343	38,071	58,272	2,786
Ohio	185,545	17,588	34,419	1,944
Totals	95,588,844	$10,056,350	101,344,494	$4,378,747

*Crude rubber including latex dry rubber content.

Rubber Trade Inquiries

The inquiries that follow have already been answered; nevertheless they are of interest not only in showing the needs of the trade, but because of the possibility that additional information may be furnished by those who read them. The Editor is therefore glad to have those interested communtcate with him.

No.	INQUIRY
1700	Manufacturer of rubber floor coverings.
1701	Manufacturer of hose cross wrappers.
1702	Manufacturer of lead inserted sheet packing.
1703	Manufacturer of rubber gloves.
1704	Supplier of hard rubber in sheets.
1705	Manufacturer of organic accelerators.
1706	Manufacturer of Duraform.
1707	Manufacturer of machines for dipping rubber balloons.
1708	Manufacturer of a debeading device.
1709	Manufacturer of tubers for straining stock.
1710	Manufacturer of tire choppers.

World Rubber Absorption—Net Imports

	Long Tons—1934			
CONSUMPTION	Apr.	May	June	July
United States	45,957	44,462	41,146	33,747
United Kingdom	8,202	9,706	13,045	6,010
NET IMPORTS				
Australia	415	769	1,512	732
Austria	339	338	339	....
Belgium	504	214	837	810
Canada	2,419	2,218	2,208	2,430
Czechoslovakia	465	1,768	1,624	1,094
Denmark	117	180	214	146
Finland	227	90	171	277
France	3,210	3,634	3,803	4,051
Germany	6,701	6,499	6,171	5,494
Italy	1,966	2,207	1,897	....
Japan	5,679	6,905	6,745	....
Netherlands	262	322	331	540
Norway	83	65	52	82
Russia	1,326	4,360	3,145	....
Spain	752	147	1,146	....
Sweden	790	605	406	1,077
Switzerland	142	194	142	104
Others	*2,250	*2,250	*2,250	*2,250
Totals	81,806	86,933	87,184	....
Minus United States (Cons.)	45,957	44,462	41,146	33,747
Total foreign	35,849	42,471	46,038	....

*Estimate. *Compiled by Leather-Rubber-Shoe Division, Department of Commerce, Washington, D. C.*

CHLORINATED RUBBER. The satisfactory use of chlorinated rubber as a finish for leather in place of nitrocellulose indicates great possibilities of this new material in that branch of the leather trade. The chief disadvantage is the greater cost of chlorinated rubber as compared to nitro-cellulose.